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*H. H. Wilson*  
*as a testimony of very*  
**FLORA INDICA;**  
*high* OR *regard respect*  
DESCRIPTIONS  
OF  
*from*  
**Indian Plants,** *Wallich*

BY THE LATE  
WILLIAM ROXBURGH, M. D. F. R. S. E. &c. &c.



EDITED

BY WILLIAM CAREY, D. D. F. L. S.

TO WHICH ARE ADDED

DESCRIPTIONS OF PLANTS

MORE RECENTLY DISCOVERED

BY NATHANIEL WALLICH, M. ET PH. D. F. R. S. E. &c.

*Superintendent of the Botanic Garden, Calcutta.*

VOL. II.

"ALL THY WORKS PRAISE THEE O LORD." *David.*

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## ADVERTISEMENT.

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IN presenting the second volume of Roxburgh's *Flora Indica* to the Public, it has been deemed necessary to explain, briefly, the causes of the delay, which has unavoidably occurred during its progress through the press; and this task very properly devolves on me, in consequence of my having, unfortunately, been the chief cause of that delay,

A few months subsequent to the publication of the preceding volume, in 1820, I was deputed on a botanical mission to Nipal, intended, originally, to have occupied only one year, but which was protracted to eighteen months, and lasted until my return in the beginning of 1822. The printing, which had been left off at p. 81, was immediately resumed, and continued up to the end of May, when p. 200 was struck off.

A severe fever, which I had caught on my descent to the plains, and which I had endeavoured in vain to root out by a cruise at the head of the Bay of Bengal, during one of the preceding months, at this time again attacked my enfeebled constitution; I was confined to my couch for nearly two months, and at length was forced to try a voyage to sea, in search of that health, to which I had so long been a stranger. I visited, accordingly, Pinang and Singapore in the straits of Malacca, and returned to this garden on the last day of the year, after having attained the immediate object of the trip, and

loaded with a botanical collection, such as could not fail resulting from a stay of several months, on those indescribably rich islands, and fully proportionate to that, which it had been my good fortune to bring away from Nipal. The materials, which by these means have been placed at my disposal will, I humbly hope, enable me to contribute a number of not altogether uninteresting additions to this work.

Here may I be permitted to claim the indulgence of the Reader, while I state the reasons, which induce me to express myself thus freely on the extent of my Nipal and Malayan treasures. It would have been impossible for any one, in the least attached to the study of Botany, to have visited those favoured countries, and not to have made large collections of plants; such is the prodigious extent of their riches, and such are the comparative facilities of gathering these. But to have been supported, as I was, during my researches, especially in Nipal, by the matchless munificence of the Honourable East India Company, which left nothing unprovided, that could in any manner tend to ensure success—and yet to have failed realizing the objects of my journey, would have deservedly stamped my labours and my name with indelible disgrace. In short, if I did succeed in reaping an ample harvest, it was because I could not possibly have missed the object, under those glorious auspices, which fell to my lot.—But I return to the final progress of the volume.

The printing which my inestimable friend, the Rev. Editor, had thought proper to suspend during these, to me most bitter intervals, was immediately resumed and the volume is at length completed. If it is considered that sickness is under the controul of no one, that the distance at which I live from the press at Serampore is twenty miles, that the numerous duties belonging to my charges, are fully adequate to occupy the time of one individual; finally, that a tropical climate is but too apt to throw sudden and unexpected obstacles in the way of close application—I trust, that my small share in this vo-

#### ADVERTISEMENT.

lume will meet with a lenient and kind reception. It was necessary to break off before the end of *Pentandria Monogynia*, that the number of pages might not be swelled to an unreasonable extent. If life and health are spared, no exertions on my part shall be wanting, with the view of compleating, in the course of next year, the third volume which is intended to commence with a vast number of remaining *Rubiaceæ*, and to comprise the rest of *Pentandria*, together with *Addenda* to the two preceding volumes.

N. WALLICH.

Botanic Garden, Calcutta, }  
March, 1824. }





*Class 5th.*

## PENTANDRIA

### MONOGYNIA.

*HELIOTROPIMUM. Schreb. Gen. N. 239.*

*Corol* salver-shaped ; throat contracted with vaults. *Seeds* four, naked, or each covered with its proper bark.

1. *H. indicum, Willd. Sp. i. 740.\**

Annual, diffuse, ramous. *Leaves* petioled, cordate. *Spikes* leaf-opposed, peduncled, solitary. *Fruit* two-cleft.

Bena patsja. *Rheed. Mal. x. p. 95. t. 48.*

*Sans.* श्रीहस्तिनी, Shreehustinee, भूरुखी, Bhooroondee.

*Beng.* Hatti-soora.

This is one of the most common plants in India, it is in flower at all seasons, and delights in out-of-the-way corners, rubbish, &c. where the soil is rich and dry.

*Stems* and *branches* diffuse, dichotomous, hairy, general height one, or two feet, but spreading to an extent greater than its height. — *Leaves* for the most part alternate, petioled, cordate, wrinkled, margins curled. — *Spikes* leaf-opposed, generally solitary, peduncled, longer than the leaves. — *Flowers* rigidly sessile, minute, in two rows on the upper side of the spikes. — *Corol* longer than the calyx. *Tube* gibbous ; *border* five-lobed, pale rose colour. — *Seeds* united towards the base, two-cleft, smooth.

\* *Tiaridium, Lehm. Asperifol.*—N. W.

2. *H. coromandelianum*, Willd. Sp. i. 742.

Annual, ascending, pubescent. *Leaves* petioled obovate, entire. *Spikes* paired, and solitary.

Beng. Naga-phoollee.

A native of Coromandel, Bengal, &c. flowering time the hot and rainy season.

*Root* simple, annual.—*Stems* several, near the base spreading on the ground, afterwards ascending; clothed with white, soft hair.—*Leaves* scattered, petioled, obovate, entire, hairy like the stems and branches.—*Spikes* terminal, and interspersed among the leaves, generally paired. *Flowers* numerous, small, white, placed in a waved row on the upper side of the spikes.—*Calyx* half the length of the corol, the exterior, inferior, divisions longer.

3. *H. paniculatum*, R.

Erect, ramous, hairy. *Leaves* petioled, ovate-oblong. *Spikes* terminal, paniced, secund. *Tube* of the corol long and gibbous.

A native of Chittagong, flowers during the hot season.

4. *H. brevifolium*, Wall.

Covered with adpressed greyish hairs; *stems* prostrate, densely tufted; *leaves* approximate, alternate, sessile, narrow-linear, sub-falcate, with recurved margins; *racemes* terminal, slender, straight; the short *bractes* opposite to, and equalling the peduncles, linear; *calyx* and *seeds* strigose.

Cultivated by the Rev. Dr. Carey, in whose garden it came up accidentally. I have received specimens from the vicinity of Katumanda and Gosain-Than,\* in Nepala.

\* A noted place of religious resort within the first range of the Himalaya mountains, about seven days journey from Katamanda, very little to the westward of North, and greatly elevated above the level of that place. My esteemed friends the Hon. E. Gardner and Mr. Robert Stuart have repeatedly sent collecting parties from the residency at Nepala to that most interesting place, which have as often returned with a rich harvest of specimens, seeds and roots strikingly resembling,

*Root* woody, slender, almost entire, sending forth copious slender stems which lie flat on the ground, spreading in all directions without striking root, round, about ten inches long, with a few simple branches. The whole plant greyish from copious stiff adpressed hairs.—*Leaves* approximate, half or three-fourths of an inch long, scarcely half a line broad, with recurved margins, sub-bifarious, the uppermost sub-opposite, crowded, strigose on both sides, the middle rib much elevated on the under surface.—*Raceme* solitary, terminal, at first slightly recurved, afterwards straight, two, sometimes three inches long, with unilateral, somewhat remote, small flowers, on short pedicels.—*Bractes* linear, inserted on the side of the common peduncle, opposite that to which the pedicels are attached, by the lengthening of the raceme becoming alternate with the minute flowers, exceeding the pedicels in length.—*Calyx* strigose, with deep linear segments.—*Corolla* twice as long as the calyx, white with a yellow tube; *throat* contracted; *border* plicated; *lacinae* slightly cre-nulate, acute.—*Seeds* united into a globular body covered with adpressed hairs.

*Obs.* This species is quite different from *H. curassavicum*, *zeylanicum*, and *demissum*, to all of which it has some affinity. Its numerous stems forming dense tufts, lying flat on the ground, without creeping; its short, most narrow, very approximate leaves, covered with greyish adpressed hairs, easily distinguish it from all the plants of its numerous tribe.—N. W.

sembling, as might have been anticipated, the vegetable productions of the northern parts of America, and of Europe. The name (Gossain-Than or Sthan) means the place of devotees, (Gossain, or Goswamin, Lord of cows); it is also, and perhaps more commonly called Neel-Kuntha, signifying blue-throated, an appellation of Shiva who is fabled to have drank the poison which was produced on the second churning of the ocean, which remained in his throat and coloured it blue. It is likewise an appellation of Gurooda the regent of birds, and the name of a beautiful bird, *Coracias Indica*. Consult Kirkpatrick's, and Hamilton's account of Nepala.—N. W.

## TOURNEFORTIA.

*Calyx* five-parted. *Corolla* hypocrateriform or sub-rotate; *throat* naked. *Stamina* enclosed. *Stigma* peltate, sub-conic. *Berry* with two nuts; each two-seeded.—R. Brown.

1. *T. argentea*.

Erect, covered with sericeous tomentum; *leaves* ovate; *cymes* decomposed; *corolla* rotate; *stigma* sessile, bifid.

*Buglossum lanuginosum*, *Rumph. amb. iv. 119. t. 55.*

I have specimens of this singularly beautiful plant covered with blossoms and fruit, which were gathered by my esteemed friend Mr. W. Jack on the Island of Carnicobar in October 1819.—I have found it in great abundance on different parts of the shores of the Island of Mauritius.—N. W.

2. *T. viridiflora*, Wall. See *Lithospermum viridiflorum*, Roxb.

## LITHOSPERMUM. Schreb. Gen. N. 241.

*Corol* funnel-shaped, throat perforated, and naked. *Calyx* five-parted. *Germ* four-celled, with one pendulous ovulum in each.

1. *L. viridiflorum*, R.

Shrubby, erect. *Leaves* ovate-lanceolate, rugose, entire. *Spikes* peduncled, twice or thrice dichotomous, recurved.

A native of Chittagong, where it blossoms during the rains, and cool season.

*Stems* erect, ligneous, soon throwing out many, patent alternate, round, hairy branches; whole height from three to five feet.—*Leaves* alternate, petioled, ovate-lanceolate, acute, rugose, entire, a little hairy underneath; length from four to six inches, and from two to three broad.—*Peduncles* at first terminal, but becoming lateral; as

vegetation advances, twice, thrice, or even more times bifid; each division ending in a somewhat long, recurved, second spike with two rows of small, exquisitely beautiful, green flowers on its convex side.—*Bractes* none.—*Calyx* five-leaved.—*Corol* with the tube enlarged toward the base, twice the length of the calyx; *border* slightly five-notched; *throat* open.—*Anthers* linear, sub-sessile near the base of the tube of the corol.—*Germ* ovate, four-celled with one ovulum in each, attached to the top of the axis.—*Seeds* ovate-cordate, smooth.

*Additional remark by N. W.*

This elegant shrub which has been referred by Lehmann to *Heliotropium* (Syst. Veg. ed. Roem. et Schult. vol. iv. 730)\* is certainly a species of *Tournefortia*. It was introduced into the Botanic Garden in 1810, and has grown to a very large branchy shrub which climbs over trees of considerable size. Though it blossoms profusely every year, it is but rarely that it produces ripe seeds. It is however easily multiplied by layers. *Leaves* and young branches covered with much soft short hair; *tender* parts silky.—*Calyx* very deeply divided, so as to appear almost five-leaved; *segments* linear.—*Mouth* of the corolla contracted, border plicated, its laciniae ciliated; tube hairy without.—*Ovarium* surrounded by a yellowish glandular swelling. *Style* short. *Stigma* peltate, slightly depressed in the centre, green.—*Berry* deep purple, oval, smooth, containing two semi-oval two-seeded sometimes one-seeded nuts.—N. W.

CYNOGLOSSUM. Schreb. Gen. N. 243.

*Corol* funnel-shaped; the throat contracted with vaults. *Seeds* four, depressed, affixed to the style.

\* This very valuable work will hereafter be quoted under the abbreviation, Syst. Veg.—N. W.

1. *C. racemosum*, R.\*

Annual, erect, ramous. *Leaves* lanceolate, sessile, hairy. *Spikes* paired and solitary, lateral, and twining. *Flowers* pedicelled. *Seeds* echinate, distinct.

Found growing on rubbish in the vicinity of Calcutta; flowering time the rainy season.

*Root* annual.—*Stem* erect, with many alternate, erect branches from every part; all covered with short, stiff, depressed hairs; the whole height about a foot and half.—*Leaves* alternate, sessile, lanceolate, hairy, veined, a little wrinkled, margins minutely curled, and ciliate; from two to three inches long.—*Spikes* terminal, and axillary, peduncled, generally paired, though sometimes single; when at their full length much longer than the leaves, with the apices incurved.—*Flowers* alternate, on the upper side of the spikes, pedicelled; while expanded erect, afterwards cernuous, very small, white, with a purple throat which is somewhat contracted by five two-lobed glands.—*Calyx* longer than the corol; *leaflets* oval, hairy.—*Stamens* just within the mouth of the tube of the corol.—*Seeds* distinct, of a roundish conical shape, armed with many short, thick, stiff, glutinous, headed bristles, and affixed to a conical receptacle, which has four corresponding concavities to receive the four seeds.

2. *C. furcatum*, Wall.

*Racemes* very long and slender, divaricated, forked, naked; *leaves* entire glaucous, soft-haired; *radical* oval-lanceolate, pointed, at both ends petioled; *cauline* sessile oblong, the uppermost ovate cordate; *nuts* echinate.

A native of Nepala, and from thence introduced in 1818 into the Botanic Garden where it blossoms during the rainy season.

*Root* thick, woody, twisted.—*Stems* several erect, two or three feet high, round, strong, covered with short soft hairs, which are *reflexed* on its lower part, but erect on its summit and branches.—

\* *C. canescens*, Willd.—Syst. Veg. iv. 78 et 760.—N. W.

*Branches* simple spreading towards the apex of the stem.—*Radical leaves* lying mostly flat on the ground, from five to six inches long, soft, of a pale green, somewhat glaucous colour, rugose or bullate above, with a prominent rib and large opposite sub-longitudinal nerves which unite within the margins by remote arched veins; the *petioles* about half the length of the leaves with a deep marginated channel.—*Cauline leaves* scattered, acute, slightly stem-clasping sometimes obscurely decurrent on one side, two or three inches long, the uppermost ovate-cordate, very small.—*Racemes* terminal, filiform, from four to eight inches long, generally twin, short-peduncled, very spreading, recurved while young, covered with abundance of short greyish hairs.—*Flowers* small, blue, of a darker colour towards their centre, unilateral at first, becoming afterwards bifarious and somewhat remote, on short pedicels. *Calyx* hairy, when fruit-bearing nodding; its *laciniæ* oval, acute, ciliate. *Corol* a little longer than the calyx; *tube* obscurely quadrangular; *laciniæ* oval, the mouth crowned with five short, retuse scales.—*Stamina* in the middle of the tube; *anthers* enclosed, brownish. *Nuts* oval, depressed, marked with numerous short, echinate, headed and somewhat glandular bristles, attached on their inside to the angular base of the permanent style.

*Obs.* This elegant plant is extremely like a *Myosotis*, while in blossom. The fruit, however, is that of a *Cynoglossum*. It comes near to the preceding species, but differs in having long-petioled radical leaves which like all the rest are entire, and not, as is the case in that plant, crenate. The shape of the fruit as well as the colour of the flowers are also different.—N. W.

### 3. *C. diffusum*, R.\*

Annual, diffuse, hairy. *Leaves* oblong, soft, hairy. *Flowers* solitary. *Stamens* hid in the gibbous tube. *Seeds* scabrous.

\* *Lehmann, Asperifol*, p. 140.—*Syst. Veg.* iv. 762).—I have received specimens of the plant from Nepal gathered in the month of November.—N. W.



A native of Bengal ; appearing in Gardens, and on cultivated land in the cold season.

*Stems* diffuse, slender, clothed with stiff hairs ; length from six to eighteen inches.—*Leaves* alternate, the inferior ones petioled ; the superior ones sub-sessile ; all entire, oblong, soft, and hairy.—*Flowers* solitary, between the leaves, short-peduncled, small, white, with a tinge in the throat.—*Calyx* longer than the tube, hairy.—*Corol* with the tube gibbous, its mouth contracted with five broad, emarginate scales.—*Stamens* hid in the belly of the tube.—*Seeds*, or arils obovate, scabrous, affixed by the base, and on the inside to the stigma.

#### 4. *C. marifolium*, R.

Annual, diffuse. *Leaves* bifarious oblong, hairy. *Flowers* solitary between the leaves ; *corol* half the length of the calyx ; *seeds* round, rough.

A native of the eastern parts of Bengal ; flowering time the cold season ; soon after which the seed ripens, and the plants perish.

*Root* annual.—*Stem* none, but several, ramous, slender, round, hairy branches spread on the ground.—*Leaves* alternate, bifarious, sub-sessile, elliptic, hairy underneath ; half an inch in length, and about half that in breadth.—*Flowers* axillary, or between the leaves, short-peduncled, solitary, very small, of a pale whitish blue.—*Calyx* five-leaved ; *leaflets* lanceolate, hairy on the outside, nearly twice as large as the corol.—*Corol*, the tube very short, the throat contracted by five emarginate scales alternate with the stamens.—*Filaments* short ; *anthers* large, half hid in the mouth of the tube of the corol.—*Style* short, clavate ; *stigma* emarginate.—*Seeds* rough, round, almost hid in the calyx, affixed to a very short columnar receptacle.

### MYOSOTIS.

*Calyx* with five, more or less deep segments. *Corola* hypocrateriform, the throat shut with five vaults, limb obtuse, five-parted,

*Stamens* enclosed, *anthers* peltate. *Stigma* capitate. *Nuts* four, umbilicate and perforated at the base.—R. Brown.

1. *M. ovalifolia*, Wall.

*Stem* slender, procumbent, with short adpressed hairs. *Leaves* ovate, sub-cordate, petioled, acute; *racemes* long, filiform; *seeds* very smooth, sharply triangular.

Grows wild in Nepala; time of flowering the rainy season.

*Root* fibrous.—*Stem* very thin, slightly angular, simple, or sub-dichotomous, as well as the leaves and racemes beset with numerous rough, short, white, erect, adpressed, subulate hairs.—*Leaves* remote, measuring from an inch to an inch and a half, with a subulate point, ciliate, nerves sub-opposite, elevated beneath; *radical* sub-cordate.—*Petioles* slender, channelled; the lowermost long, and equalling the leaves, the uppermost scarcely one-fourth of their size.—*Raceme* terminal, naked, most slender, from six to eight inches long, while young revolute, afterwards quite straight, with minute, remote, nodding, pedicelled flowers.—*Calyx* turbinate, five-cornered, hairy, with lanceolate, acute *laciniæ*.—*Corolla* blue, twice as long as the calyx, with a ventricose tube, and ovate, obtuse *laciniæ*; *valves*, broadish.—*Anthers* ovate, peltate, enclosed.—*Seeds* brown, shining, perfectly smooth and naked, with very short prominent angles.

*Obs.* This species comes near to *M. latifolia* of Poiret, and *macrophylla*, Marsch. a Bieberst. From the former it differs in its simple racemes and sharply three-cornered seeds; from the latter in having scarcely cordate leaves, and perfectly smooth seeds, all of which generally come to maturity.—N. W.

BORAGO. Schreb. Gen. N. 248.

*Corol* rotate. Throat closed with rays.

1. *B. indica*, Willd. Sp. i. 776.\*

Annual, diffuse. *Leaves* sub-sagittate, stem-clasping, the lower

\* *Trichodesma*, Brown. prodr. Nov. Holl. i. 493.—N. W.

ones opposite. *Flowers* solitary, drooping. *Calyx* conical, with five hornlets behind.

*Beng.* Chhota-kulpa.

Common over most parts of India, producing flowers and ripe seed the greatest part of the year.

*Root* fibrous, annual.—*Stem* scarcely any, but many dichotomous, hairy, spreading branches of about a foot in length.—The lower *leaves* opposite; the upper ones alternate; all sessile, stem-clasping, sub-sagittate, entire, hairy.—*Peduncles* opposite to, or between the leaves, drooping, hairy, one-flowered.—*Flowers* pale blue.—*Calyx* five-parted, with the fissures extended into five recurved hornlets; divisions adhering by their margins, giving to the whole a conical shape.—*Corol* a little longer than the calyx; divisions cordate with filiform apices.—*Anthers* united into a firm, taper cone over the mouth of the tube of the corol.

2. *B. zeylanica*, Willd. Sp. i. 777.\*

Annual, erect, ramous, strigose. *Cauline* leaves opposite, subsessile, lanceolate: *floral* ones alternate with the solitary, one-flowered, drooping peduncles.

A native of various parts of India. Flowering time the cold season.

*Root* annual.—*Stem* erect, *branches* opposite, round, jointed, hispid with numerous sharp, stiff bristles of two sizes; the larger inserted on coloured glandular elevations; the height of the whole plant in a good soil from four to six, or even eight feet.—*Leaves* opposite, sub-sessile, lanceolate, entire, harsh, with a few stiff, scattered hairs. *Floral* leaves terminal, alternate, small, sessile, cordate-lanceolate.—*Peduncles* sub-solitary, one-flowered, drooping, sub-alternate, longer than the floral leaves, round, hairy.—*Bractes* no other than the floral leaves.—*Flowers* cernuous, pale-blue.—*Calyx* five-leaved; *leaflets* adhering slightly near the base, and at their adhesions forming five-sharp ridges, but without the posterior horns of *Borago*

\* *Trichodesma*, R. Brown, l. cit.—N. W.

*indica* ; nor, like that plant, does it shut over the seed, but becomes expanded.—*Corol* ; divisions of the border broad-cordate, with their apices sub-filiform.—*Filaments* short, and thick, inserted on the mouth of the tube of the corol. *Anthers* sagittate, woolly, each ending in a large twisted thread ; sides firmly united into a conical dome over the stigma.—*Seeds* four, ovate, smooth on the outside, rough on the inside, where lodged in the receptacle.

### S. *B. spinulosa*, R.

Annual ; diffuse, dichotomous, armed with depressed bristles. All the *leaves* alternate, sessile, oblong, scabrous. *Peduncles* leaf-opposed, one-flowered.

A native of Bengal, appearing in the cold season.

## ONOSMA.

*Calyx* five-parted. *Corolla* tubular-companulate, with a pervious, naked throat. *Seeds* four, attached to the bottom of the calyx, with imperforate bases.

### 1. *O. Emodi*, Wall.

Procumbent, covered with dots and spreading bristles ; *leaves* lanceolate, triple-nerved, less hairy beneath ; *racemes* terminal, solitary, recurved before expansion ; *flowers* twice as long as the linear bractes ; *calyx* companulate, five-cornered, with ovate *laciniae* ; *corolla* ventricose, five-keeled, narrowing towards the mouth ; *anthers* longer than the filaments ; *style* exerted.

A native of Gosain-Than in Nepala, where it is called *Maharanga*.\* Flowering time September—December.

*Root* stout, sub-fusiform, dividing at the end into several thick branches, whitish within, covered with deep purple bark ; *fibres* ca-

\* महारङ्ग, a strong or intense colour. Ed.

pillary, few.—*Stem* slender, round, divided into simple branches, as well as all the other parts covered with small vesicular dots, each terminating in a straight, simple bristle.—*Leaves* scattered, sessile, hispid and dotted above, smoother below, with three longitudinal nerves, uniting a little above the base, sometimes with another pair from the middle rib; varying considerably in size, mostly lanceolate, four or five inches long; sometimes sub-linear and in that case generally shorter.—*Racemes* gradually expanding and becoming erect as the flowers open, very hispid, one or two inches long.—*Flowers* small, copious, secund, erect, on short pedicels, which equal their linear, solitary *bractes*.—*Calyx* ovate, five-angled, growing larger with the ripening seeds; *lacinia* triangular, acute, the base of their sinuses forming five prominent corners.—*Corolla* pale, bluish toward its mouth, twice the length of the calyx, hairy, five-keeled, with as many deep furrows; the base inverted over the ovaria, and embracing the base of the style; *throat* contracted; *lacinia* ovate, acute.—*Filaments* inserted on five villous protuberances, below the middle of the corolla, corresponding to the external five furrows; *anthers* linear-sagittate, larger than the filaments, converging into a cone; their slightly twisted bases cohering.—*Style* longer than the corolla, slender; *stigma* annular.—*Seed* brownish, shining, dotted, and tubercled, keeled on the inner side, ending in a compressed, short beak, and in other respects exactly like those of *O. simplex*, Gaert. Carp. i. 325. tab. 67.

*Obs.* I should have taken this plant to be the same as *O. tinctorium*, had any of the authors I have consulted, and who appear to have copied Marschal a Bieberstein's description of that species, made any allusion to the remarkable structure of the corolla. Its base is bent inwards, forming a narrow margin, which closely embraces the lower part of the pistil; its middle is sharply five-keeled and marked within with five large protuberances on which the stamina are inserted.—The root is used as a material for dying blue, and im-

ported from Gosain-Than, probably also from Thibet, as a drug, under the native name, mentioned above.—N. W.

## 2. *O. bracteatum*, Wall.

Erect; densely hispid and scabrous; *leaves* lanceolate, acute, three-nerved, cinereous and villous beneath, the uppermost ovate, stem-clasping, as well as the long bractes ending in a most slender filiform acumen; *calyx* longer than the tubular *corolla*, divided into five unequal, linear leaves, about as long as the bractes.

Specimens of this elegant plant were gathered at Shree-nugur by Kamroop, a brahmun whom I have stationed as a collector of plants, with my learned and esteemed friend Capt. W. S. Webb.—Native name *Lalgiri*.

The whole plant is beset with small vesicular dots, terminating in long, hollow, rigid, shining bristles, becoming yellowish when the plant is dried.—*Stem* several feet high, round, divided into several hollow branches.—*Leaves* scattered, copious, approximate, sessile, attenuated into a sharp point, four or five inches long, entire, dotted and very hispid above; covered below with grayish-white or silvery, short, soft down, with hispid nerves. The uppermost become gradually smaller and more ovate, ending in a very long, slender acumen.—*Racemes* terminal, numerous, corymbose, sub-sessile, recurved, from three to five inches long, covered with long, soft, white hairs.—*Bractes* imbricated on one side of the raceme, and nearly covering the flowers, one under each calyx, lanceolate, their acumen very long, and almost filiform.—*Flowers* large, crowded, purplish, sessile.—*Calyx* divided to the base into five unequal, linear, erect, woolly leaflets.—*Corolla* shorter than the calyx, villous on the outside, tubular, slightly five-cornered, widening toward its mouth; *laciniæ* small, ovate, equal, obtuse, ciliated.—*Filaments* inserted a little below the middle of the corolla on five elevated angles, equalling the linear *anthers* which scarcely reach the mouth of the corolla; with the bases of the latter bifid, slightly twisted, and cohering.—*Style* fi-

liform ; *stigma* obtuse, slightly bifid, within the corolla.—*Seeds* four, osseous, ovate, triangular.—N. W.

*ANDROSACE. Schreb. Gen. N. 257.*

*Involucre* to the umbel. *Tube* of the corol ovate, with a glandular mouth. *Capsules* one-celled, globose.

1. *A. rotundifolia, Hardwicke, Asiat. Res. iv. p. 350.*

*Leaves* radical, petioled, sub-rotund. *Involucres* dentate.

Found by Captain Hardwicke, on the most elevated mountains near Shree-nugur.

*Addition by N. W.*

This elegant species has been fully described by Sir J. E. Smith in *Exotic Botany*, ii. p. 107: t. 113; where Behar and Nepala are stated to be its native countries. From the latter I have had numerous specimens, collected at the Turaya by Mr. Jack, and about Katumanda by my plant-collectors.—In the fourth volume of the edition of *Linnei Systema Vegetabilium* by Dr. Roemer and Schultes the plant has been described in two different places, under the name of *rotundifolia*; first in p. 159 (with an emendation at p. 785) where p. 531 of Poirer's *Suppl. to the Encyclopedie Botanique* is quoted instead of p. 550; and afterwards under the section with sessile flowers, referring to a communication from Mr. Lehman, who probably also had his knowledge of the plant from the first mentioned work.

2. *A. sarmentosa, Wall.*

Densely covered with long silky hairs, creeping and sending forth numerous shooting runners; *leaves* sessile, cuneate-lanceolate tufted; those of the runners verticilled; *umbels* radical, long-pedun-



cled, patent; *involucels* setaceous, shorter than the pedicels; *calyx* equalling the ventricose tube of the corolla.

Numerous specimens of this charming species were sent to me by the Hon. E. Gardner and Mr. Robert Stuart from Gosain-Than in Nepala, under the name of *Nita* and *Nitaha*, which also is the common appellation for all the species of *Primula* growing at that interesting place.

*Root* consisting of a fascicle of whitish fibres producing one or more dense tufts of leaves, from the centre of which spring numerous hollow, naked, cylindrical, slender, shining, more or less deeply purple, entire, hairy stems, which strike root and produce offsets at the distance of four or more inches. Besides these there are produced several long and very slender leafy runners.—*Leaves* an inch or an inch and a half long, sub-erect, acute, entire, tapering downwards, very hairy, becoming smoother as they advance in age, surrounded and intermixed with numerous very small leaflets, covered with dense wool; those of the runners in remote verticils of threes or fours.—*Scapes* six or eight inches long, erect, hairy. *Umbels* hemispherical, measuring about two inches in diameter, spreading.—*Involucels* slightly canaliculate, two or three times shorter than the hairy, filiform *pedicels*, to the somewhat thickened bases of which they are attached.—*Flowers* small, rose-coloured.—*Calyx* hairy, ovate, slightly five-cornered, with obtuse segments.—*Corolla* smooth; throat contracted, crowned with a prominent, annular, yellowish swelling; *segments* of the spreading border oval, obtuse, scarcely longer than the tube.—*Anthers* ovate, in the middle of the tube.—*Stigma* truncate.—*Capsule* oblong, shining, smooth, brown, twice as long as the persistent calyx, with five lanceolate recurved valves.—*Receptacle* globular, elevated on a pedicel.—*Seeds* numerous, minute.—N. W.

### 3. *A. lanuginosa*, Wall.

Covered with milk-white, soft, long hairs; *stem* ascending; *leaves*

sessile, lancolate, acute, broad at the base, tufted, becoming scattered; *umbel* peduncled, woolly, round, with pedicels equalling the linear involucels; *calyx* woolly, five-leaved, equalling the ventricose tube; *throat* much contracted.

Communicated together with the following species by my esteemed friend Dr. Govan from the Sirmore mountains.

My specimen appears to be caulescent, somewhat branchy and ascending, every part of it covered with white, soft, long, shining wool.—*Leaves* about half an inch long, by three lines broad, dotted between the copious hairs, scattered as the stem lengthens, but at first tufted.—*Peduncle* four or five inches long, erect, woolly, terminal or lateral. *Umbel* scarcely an inch in diameter, with about a dozen short-pedicelled, rose-coloured *flowers*; *pedicels* about one-fourth of an inch long, together with the involucels and calyces woolly.—*Leaves* of the *calyx* linear-cuneate. *Limb* of the corolla flat, with obovate laciniae; *throat* with an elevated ring, contracted.—*Ovarium* turbinate; *style* short, *stigma* capitate.

*Obs.* This little species approaches to *A. incana*, Lam. Illustr. i. 432 and Poiret's Suppl. to the Encycl. Bot. i. 359: but appears to differ sufficiently in the leaves being larger, and the pedicels not exceeding the involucre in length. That species seems besides to be without stem, while mine is caulescent.—N. W.

#### 4. *A. incisa*, Wall.

Stemless; *leaves* reniform, lobed and dentate, petioled, hairy; *umbels* many-flowered, with lobed *involucels*, equalling the pedicels; *calyx* much larger than the corolla.

This interesting species is exceedingly different from all the others. It is thinly beset with white, soft, spreading hairs.—*Leaves* reniform, or reniform-orbicular, about an inch in the transversal diameter, very obtuse; sinus at the base large, margin incised, lobes ovate, close together, with three or four ovate, acute, large teeth, incisures narrow; *petiols* hairy, three times longer than the leaves.—*Umbels*, several from

the same root, erect, elevated on filiform scapes above the leaves, large, round, consisting of many flowers. *Involucels* almost equalling the pedicels, striated, cuneate, divided at the apex into two or three unequal, sharp lobes, rarely lanceolate, undivided. *Calyx* twice as large as the corolla, infundibuliform, hairy, consisting of five large, lanceolate, veined, acute segments. *Tube* of the corolla ventricose, shorter than the limb; *throat* pervious; *laciniæ* obcordate.—N. W.

5. *A. cordifolia*, Wall. in *Asiat. Research.* xiii. 371.

Villous; *leaves* ovate-cordate, obtuse, sinuate, crenulate; *scapes* almost equalling the petioles; *umbells* five-flowered, with setaceous involucels; *calyx* companulate, shorter than the corolla, enlarging over the fruit.

A native of forests in Nepala, blossoming in the beginning of the year. Newar name *Boollée-Soa*.—N. W.

## PRIMULA.

*Calyx* tubular, angular, five-toothed. *Corolla* hypocrateriform with pervious throat, and five-lobed limb. *Stamina* enclosed. *Stigma* globose. *Capsule* oblong, one-celled, with ten teeth.

1. *P. denticulata*, Smith.

*Leaves* minutely toothed, revolute, glutinous, somewhat hairy. *Umbel* dense, many-flowered. *Limb* of the corolla flat, its lobes cloven. *Exotic Botany.* ii. 109. t. 114.\*

A native of the mountains bordering in Silhet and of Nepala, from whence I have had innumerable specimens gathered in the vicinity of Katumanda and at Gosain-Than, where the plant is

\* In Poiret's Suppl. to the Encyclopédie Botanique the native place of this plant is laid down at *Chillongo on the coast of Africa* instead of "Chitlong in Upper Nepala," as the *Exotic Botany* has it. The error has been copied in Roem. and Schult. Syst. Veg. iv. p. 151, and not corrected at p. 783, although the proper habitat is there mentioned.—N. W.

called *Nitaha*. From both countries it has been repeatedly introduced in the Botanic Garden where it blossoms freely during the cold season; the difficulty, however, of preserving this and the following species is very great, as numbers die during the hot weather, and in the rains.

This lovely plant has been so fully described by Sir J. E. Smith that it is only necessary to add one observation. While young the top of the root produces a number of large, oval, concave, acute, closely imbricated, rose-coloured, membranaceous bractes, which embrace all the tender parts and even the imperfectly formed umbel. As the plant advances in age most of them disappear, but some remain as has been represented in the figure quoted above.—N. W.

### 2. *P. prolifera*, Wall.

Very smooth, free from meal; *leaves* oblong, sub-spatulate, obtuse, dentate, petioled; *scape* very long; *flowers* umbelled, becoming verticilled; bractes linear or deformed-leafy.—*Asiat. Res.* xiii. p. 372.

A native of the mountains bordering on Silhet whence it was introduced into the Botanic Garden by my worthy assistant, the late Mr. M. R. Smith. Time of blossoming February to April.

The only species to which, this elegant plant has any resemblance is *P. verticillata*; it differs, however, sufficiently in its entire smoothness, its oblong, blunt, denticulated leaves, and many-flowered whorls with erect bractes, varying in their form, generally foliaceous in the lowermost and linear in the others.—N. W.

### 3. *P. rotundifolia*, Wall.

*Leaves* round-cordate with acute broad teeth, both the lower part and the round, many-flowered umbel, are covered with dense yellowish meal; *petioles* long and slender; *involucels* setaceous half the length of the *pedicels*; *tube* long; *laciniae* ovate crenulate; *mouth* open, surrounded with a narrow annular margin.

A most charming species, a native, with the following species of Gosain-Than. Name *Sapha-Nitaha*.

*Root* consisting of many slender reddish fibres, producing at the top a number of small ovate bractes which surround the plant bud as is the case in *P. denticulata*.—*Leaves* numerous, rising in an oblique direction from the ground, almost orbicular, perfectly obtuse, from one to two inches in diameter, with triangular sharp, somewhat unequal teeth, sinus at the base entire, with small rounded lobes; smooth above, obscurely veined and reticulated; densely covered underneath, with yellowish meal.—*Petioles* four, five, or six times longer than the leaves, channelled, broad and membranaceous at their base, smooth, except while young, when they are mealy.—*Scape* smooth, round, about eight or ten inches long, hollow.—*Umbel* spreading, round, very mealy, nearly three inches in diameter, with about twelve large purple flowers.—*Pedicels* slightly pubescent, about six lines long, bearing capsules twice that length. *Involucels* shorter than the peduncles, persistent.—*Calyx* somewhat gibbous at the base, deeply five-cleft; segments lanceolate, acute, mealy on both sides.—*Tube* of the *corolla* cylindric, four times as long as the calyx, enlarging towards the mouth, which is wide and marked with a yellowish membranaceous elevated margin. *Limb* flat and spreading, consisting of five obovate, somewhat refuse, indistinctly crenulate segments, half the length of the tube.—*Filaments* inserted in the middle of the tube; *anthers* oblong.—*Ovarium* cylindric, smooth. *Style* filiform; *stigma* sub-capitate below the mouth of the corolla.—*Capsule* smooth, brown, oblong, nearly twice as long as the calyx, opening with from five to eight unequal teeth, which gradually separate into as many recurved valves.—*Placenta* globular, pedicelled.

*Obs.* *P. rotundifolia*, Pallas, differs widely from this species and has been ascertained to be the same as *P. sibirica*. Jacq. vid. Syst. Veg. iv. 143.—N. W.

4. *P. Stuartii*, Wall.\*

*Leaves* lanceolate oblong, erect, acute, closely fringed with cylindric, most numerous, unequal teeth, smooth and glaucous above, densely covered underneath with yellowish meal, tapering downwards into a broad membrane-margined *petiole*, equalling them in length; *scape* very long; *umbel* many-flowered, erect, mealy, with lanceolate involucels, shorter than the pedicels; *calyx* angular, with tongue-shaped laciniae, almost equalling the tube; *throat* of the *corolla* infundibuliform; *laciniae*, rounded *entire* or *fringed* with linear teeth.

Native name *Masoo Nitaha*.

A tall, stately plant, rising from a fleshy, thick, fibrous, pink-coloured root, and embraced while young by a great number of ovate, acute, membranaceous, imbricated bractes, some of which are persistent, intermixed with the withered petioles.—*Leaves*, including their petioles from eight to ten inches long, and one or two broad, lanceolate, more or less oblong, the margins at first revolute, afterwards flat, marked with parallel, small, linear-cylindric, sharp, unequal teeth, the upper surface very pale and smooth, the lower thickly strewed with farina, with the mid-rib elevated, and reticulated if held towards the light.—*Petioles* very broad with large membranaceous margins, especially toward the base; smooth.—*Scape* strong, round, erect, generally twice as long as the leaves, from one to two feet in height.—*Umbel* erect, densely mealy on all its parts, consisting of about a dozen very large, fragrant, yellow flowers, the outermost of which are slightly nodding.—*Involucels* lanceolate, acuminate, one-nerved, scarcely one-third the length of the peduncles, slightly connate at their broad bases.—*Peduncles* obscurely angular, an inch long.—*Calyx* five-keeled, infundibuliform, mealy on both sides, with ligu-

\* During the progress of this sheet through the press my lamented friend whose name the species is intended to commemorate has been consigned to the grave! In the death of Mr. Robert Stuart (son of Sir James Stuart, Bart. of Allankbank) lately officiating as Resident at the court of Katmandu, the Hon. Company has lost a servant that stood deservedly high in point of character, attainments, and every virtue that adorns humanity, and the Botanic Garden at Calcutta one of its most zealous and liberal benefactors.—N. W.

late, acute, sometimes obtuse, erect laciniae.—*Tube* of the corolla a little longer than the calyx, widening at the top into the funnel-shaped throat.—*Border* equalling the tube, spreading, of five round oval segments, fringed with linear long teeth; sometimes perfectly entire.—*Anthers* within the mouth of the tube.—*Style* very short.—*Stigma* retuse.—N. W.

5. *P. reticulata*, Wall.

*Leaves* oblong, obtuse, cordate, smooth, sharply and unequally toothed, rugose, veined; on long, slender *petioles*; *scapes* very long; *umbels* slightly mealy, erect, with lanceolate, unequal, sub foliaceous involucl's, almost equalling the peduncles; *calyx* tubular, five-keeled, with linear-lanceolate, plicated, recurved *laciniae*, about half the length of the *tube*; *border* of the *corolla* flat, consisting of five bilobate undulated segments.

Much like the preceding in stature, but more slender.—*Root* whitish.—*Leaves* oblong, ovate, cordate, sometimes with unequal lobes, obtuse, rugose and smooth above, slightly pubescent with numerous approximate nerves and reticulated veins below, without any meal; margins unequally and sharply dentate; from three to four inches long. *Petioles* very slender, erect, three or four times longer than the leaves. *Scape* slender, from twelve to eighteen inches high, smooth, round.—*Umbel* spreading, erect, with yellow flowers; the outermost nodding.—*Involucre* consisting of lanceolate sub-foliaceous leaflets, varying in length, but mostly equalling the peduncles, and like them and the calyces thinly bestrewed with meal.—*Calyx* oblong, with five angles, about half of the length of the tube, with carinated, folded, acute, recurved laciniae.—*Tube* of the corolla cylindric; mouth open, naked; limb flat, with five obovate, slightly two-lobed, undulated segments.—*Anthers* below the mouth.

*Obs.* This as well as the preceding have some resemblance to some of our Europe Cowslips, but they differ from them all, as well as from those recorded in the new edition of *Systema Vegetabilium*.—N. W.



6. *P. pusilla*, Wall.

*Leaves* crowded in tufts, spatulate, pectinate-dentate, hairy, tapering into a short petiol; *scape* filiform, very long; *umbel* round, from six to eight flowered; *calyx* sub-sessile, equalling the lanceolate involucels; *laciniæ* of the corolla triangular, deeply two-lobed, equalling the tube; *throat* shut with a dense tuft of white hairs.

A very delicate lovely species, growing in tufts.—*Root* fibrous, of a reddish tint.—*Leaves* crowded, spreading, about half an inch long, two lines broad, acute, deeply marked on the margins with four or five strong, linear teeth, sub-pinnatifid, beset on the upper surface with short, transparent, erect hairs; smooth below, the middle rib elevated.—*Scape* from three to five inches high, erect, thread-formed, slightly pubescent at the base, thinly beset with a mealy powder at the top, round. *Umbel* globose, scarcely an inch in diameter, slightly mealy, with large, deep-purple, sub-sessile flowers.—*Involucels* lanceolate, acute, reaching up to the apex of the calyces.—*Calyx* tubular, with oblong, acute segments, longer than the peduncle.—*Tube* of the *corolla* twice as long as the calyx, cylindric, scarcely equalling the spreading limb; *laciniæ* broad, triangular, deeply bifid, with diverging, oblong, obtuse lobes, marked sometimes with a toothlet at the bottom or sides of the sinus.—*Throat* completely shut up with a round and elevated bunch of milk-white hair.—*Stamina* below the middle of the tube; *stigma* capitate, just under the faux.—*Capsule* oblong, a little longer than the calyx, smooth, with five lanceolate acute valves.

*Obs.* This species comes near to *P. minima*, Linn. but differs sufficiently by the character given above.—N. W.

7. *P. petiolaris*, Wall.

Smooth; *leaves* oval, mostly rounded at both ends, margins crenato-dentate, crisped, several times shorter than the slender, naked *petioles*; *peduncles* radical, many, one-flowered, shorter than the *petioles*; *limb* of the *corolla* flat.

I have had frequent supplies of specimens of this very distinct Primrose from the vicinity of Katumanda and from Gosain-Than.

*Root* short, thick, ending abruptly, as in *P. acaulis* (to which the plant comes near) with copious long fibres. *Leaves* numerous, tufted, spreading on the ground, three inches long, sometimes acute at the base, or apex, very slightly rugose, the margins unequally notched and toothed, with subulate teeth; smooth on both sides, of a pale green above, whitish beneath, with almost parallel, and opposite, sub-transversal nerves. The younger leaves strongly crenate and crisped.—*Petioles* slender, from three to six inches long, round, with a deep furrow, and two sharp, membranaceous margins.—*Peduncles* numerous, among the petioles, one or two inches long, naked, roundish, one-flowered, most slightly pubescent, each having a small membranaceous ovate, acuminate *bracte* at its base.—*Flowers* large, pale blue.—*Calyx* sub-infundibuliform, five-cornered, smooth, with lanceolate, acuminate, slightly gland-ciliate *laciniæ*.—*Tube* cylindric, twice the length of the calyx; *limb* flat, divided into five obovate, entire, or slightly crenulate, rounded segments, sometimes terminating with a short point; *throat* yellowish, open.—*Anthers* sub-sessile in the middle of the tube. *Stigma* oblong.

#### 8. *P. nana*, Wall.

*Leaves* oval, obtuse, rugose, smooth, sub-sessile, with unequally and sharply toothed, sub-laciniate, waved margins; *umbel* sub-sessile, shorter than the leaves, with a few long-peduncled *flowers*; *tube* of the *corolla* long and slender.

A native of Gosain-Than, growing with the preceding species of which, perhaps, it is only a variety depending on age or soil.

It rises scarcely two inches above the ground; the tender parts slightly mealy. *Root* as in the preceding.—*Leaves* scarcely more than an inch long, sometimes sub-cordate at the base, on very short, broad *petioles*, slightly pubescent.—*Scape* very short, terminated by three or four pubescent erect peduncles, an inch or an

inch and a half long; sometimes the scape is entirely wanting.—*Involucels* linear, acuminate, short.—*Calyx* oblong, five-cornered, somewhat mealy, with acute laciniae.—*Tube* long and slender; *laciniae* obovate, obtuse, with dentate borders.—N. W.

### POLEMONIUM.

*Corolla* in five segments. *Stamina* standing on five-valves, which close the tube. *Stigma* three-cleft. *Capsule* superior, three-celled.

1. *P. coeruleum*, Flor. Dan. ii. t. 255. Engl. Bot. i. t. 14.

*Leaves* pinnated; *flowers* erect; *calyx* longer than the tube of the corolla.

Communicated by my friend Dr. Govan, who found it on the mountains to the north of Katgur in 1819.

My specimen agrees with our well-known European *Jacob's Ladder*. The stem is slightly beset with soft curved hairs; which are more abundant on the inflorescence, especially on the calyces; it may therefore belong to the variety recorded by Gmelin. The flowers are large and seemingly blue.—*Seeds* compressed and less angular than those represented in Gaertner's Carp. i. t. 62.—N. W.

### ANAGALLIS.

*Corolla* wheel-shaped. *Filaments* villous. *Capsule* superior, bursting all round.

1. *A. arvensis*, Flor. Dan. i. 88. Engl. Bot. 8. 529. Thunb. Jap. 83.

*Leaves* ovate, dotted beneath; *stem* procumbent.

Common in all the Northern parts of Hindoosthan; in Nepal about Katumanda.

*Root* fibrous, slender.—*Stem* short, as well as all the other parts

smooth, sub-brachiate, with procumbent, sharply four-cornered branches.—*Leaves* opposite, the uppermost frequently ternate, sessile, broad-ovate, acute, obscurely three-nerved, dotted beneath, half an inch long, the lowermost remote.—*Peduncles* opposite, axillary, filiform, longer than the leaves, naked, slightly thickened at the apex and marked there with five angles which run into the keel of the subulate, acuminate segments of the calyx.—*Corolla* dark-blue, a little larger than the calyx; *laciniæ* obovate, strongly and unequally gland-crenulate.—*Filaments* covered their whole length with glandular hairs.—*Style* permanent with a rounded *stigma*.—*Capsule* globular scarcely larger than the calyx.—*Seed* as described and figured in Gaert. Carp. i. 230. t. 50.

Obs. Although corresponding in the colour of the flowers with *A. coerulea*, Engl. Bot. 26, t. 1823, our pretty little plant differs in being more procumbent and having broad-ovate leaves.—N. W.

## LYSIMACHIA:

*Corolla* wheel-shaped. *Capsule* superior, globular, pointed, five- or ten-valved.

### 1. *L. debilis*, Wall.

Prostrate, flaccid, villous; *stems* almost simple, elongated, creeping, slightly compressed; *leaves* opposite, remote, ovate, sub-cordate, acute, dotted; *peduncles* axillary, solitary, scarcely equalling the petioles; *calyx* villous, *laciniæ* lanceolate, acuminate, as long as the glandular corolla; capsule five-valved, hairy.

This and the following species are not uncommon about Katumanda in Nepala, flowering mostly in the hot season.

*Root* fibrous.—*Stems* several, ten or twelve inches long, slender and weak, obscurely four-cornered, covered with copious jointed hair; all the young parts densely villous.—*Leaves* entire, in very remote pairs, the lowermost roundish; the rest slightly cordate at

the base, about an inch long, beset with adpressed, jointed hairs, especially underneath.—*Petiols* linear, half the length of the leaves, generally longer than the peduncles, which are densely villous, at first erect, afterwards becoming depressed.—*Flowers* large, yellow.—*Corolla* dotted with purple glands; *laciniæ* ovate, acute.—*Filaments* dotted, monadelphous at the base.—*Ovarium* villous.—*Style* smooth.—*Capsule* tending to be ovate, hairy, smaller than the calyx, nodding, bursting, with five lanceolate valves.—*Seeds* minute, numerous.

*Obs.* This species certainly comes near to *L. japonica*, Thunb. jap. 83, and consequently also to *maculata*, Brown. prodr. flor. Nov. Holl. i. 428. From the former it differs in being a larger, creeping plant, in having acute leaves and always solitary flowers; from the latter in being villous, and in the peduncles being nearly as long as the petioles.—I possess specimens of what I take to be a variety of my plant, having ovate, attenuate, acute, smaller, and more approximated leaves, with undulated margins, appearing on being dried as if they were crenate, as well as the stem and peduncles thickly beset with grayish villosity; the younger parts tomentose, white; *flowers* small, on exceedingly short peduncles which become recurved when the capsules ripen.—N. W.

## 2. *L. alternifolia*, Wall.

Slightly scabrous, adscending; *stems* angular, branchy; *leaves* alternate, sub-sessile, lanceolar, acute, equalling the axillary peduncles, with elevated nerves; *calyx* longer than the gland-ciliate corolla; *capsule* five-valved, smooth.

*Stem* from a span to a foot long, scabrous with a few glandular dots, pubescent towards the top, as are also the alternate short, undivided, adscending *branches*.—*Leaves* longer than their interstices, rarely sub-opposite, from half an inch to an inch long, varying from lanceolar to narrow or sub-linear-lanceolar, tapering and acute at both ends, entire, dotted, and marked with prominent, oblique nerves beneath, somewhat hairy while young.—*Petiols* scarcely more than

a line long, pubescent.—*Peduncles* filiform, axillary, solitary, spreading, about as long as the leaves, pubescent.—*Flowers* yellow, smaller than in the preceding species.—*Calyx* with linear-lanceolate, acuminate, slightly ciliate segments.—*Lacinia* of the *corolla* fringed with numerous glandular dots.—*Filaments* dotted, scarcely monadelphous.—*Capsule* smaller than the calyx, erect, ferruginous, regularly five-valved.—N. W.

### 3. *L. evalvis*, Wall.

Smooth, erect, with slender, simple *stems*; *leaves* alternate, ovate, acute, and tapering at both ends, with many oblique nerves, on slender petioles; *calyx* glaucous, consisting of five ovate finely acuminate leaves, larger than the *corolla*; *filaments* broad, shorter than the sagittate, erect anthers; *capsule* round, smooth, much smaller than the calyx, very thin, bursting irregularly.

*Root* consisting of many capillary fibres.—*Stems* several, from one to two feet long.—*Leaves* about two inches long, much resembling those of some species of *Amaranthus*, and membranaceous, scarcely at all dotted, with oblique, approximated, parallel, elevated nerves underneath, pallid and glaucous when dried.—*Petioles* slender about half an inch long.—*Flowers* large, yellow, erect, on filiform, sub-clavate, angular peduncles.—*Lacinia* of the calyx large and foliaceous, ovate, ending in a long capillary acumen, glaucous; those of the *corolla* ovate, acute, with very few dots, one-third shorter.—*Stamina* shorter than the *corolla*.—*Filaments* membranaceous, smooth, scarcely united at their base, shorter than the erect, thick, sagittate anthers, which burst at the sides of the apex with two oblique pores.—*Style* smooth; *stigma* capitate.—*Capsule* smooth, round, nodding, half the size of the calyx, exceedingly thin and membranaceous, sub-diaphanous, glaucous, pointed with the permanent base of the style, having the vestiges of five-valves, but bursting irregularly.—*Receptacle* large, globular, fungous, and cellular, on a short

columnar pedicel.—Seed numerous very small, angular, scabrous, as in *L. quadrifolia*, Gaert. Carp. i. 229. t. 50.

*Obs.* This species ought to be separated into a distinct genus, independent of those, to which Mr. Brown alludes in the work quoted above.—The capsule is marked with five lines diverging from the base of the style, indicating the sutures of the valves; but I have not been able to make it open along them, as it always bursts irregularly, for the most part transversely below its middle.—N. W.

#### 4. *L. pyramidalis*, Wall.

Smooth, erect; leaves linear-lanceolate, approximate, sub-sessile, dotted beneath, cauline, alternate, those of the branches sub-opposite; flowers axillary, peduncled, shorter than the leaves, forming long, terminal, leafy racemes; corolla glandular within the tube, a little longer than the calyx and stamina, with oblong, bluntish laciniae; capsule, smooth, five-valved.

Root fibrous.—Stem from six inches to two, or even three feet high, smooth, slightly angular from two elevated lines, decurrent from the insertion of each leaf, with alternate, erecto-patent, slender, short branches; the lower part marked with purple spots.—Leaves mostly scattered, except the lowermost pair and those of the branches, spreading, from linear to linear-lanceolate, tapering and acuminate at both ends, entire, from two to four inches long, sessile; the uppermost on very short petiols; floral ones narrow-linear, three or four times longer than the small, erect, flesh-coloured axillary flowers, which form terminal, slender, erect, leafy racemes.—Peduncles glandular, exceeding the flowers in length.—Segments of the calyx linear-lanceolate, acuminate, keeled, marked with three or four glandular, broad, purple, interrupted stripes, a little shorter than the corolla, the laciniae of which are oblong, and the tube marked at the bottom with numerous, purple glands.—Stamina free, smooth, scarcely equalling the corolla.—Capsule as large as a grain of pepper, smooth, round, brownish, smaller than the calyx, bursting in five valves.—Seed numerous, minute.—N. W.

5. *L. lobelioides*, Wall.

Ascending, smooth; *leaves* ovate-lanceolate, acute, tapering downwards, petioled, those at the base of the stem and branches opposite, the rest alternate, scarcely dotted; *raceme* terminal, slender; *peduncles* spreading, scattered, clavate, with short, linear *bractes*; *stamina* free, much longer than the corolla; *capsule* round, smooth, larger than the calyx, five-valved.

*Root* consisting of many capillary reddish fibres; *stem* slender, one or two feet long, slightly angular, with a few short scattered branches.—*Leaves* entire, from half an inch to an inch long, with a very few glandular specks, of a pale sub-glaucous green.—*Petioles* short, linear.—*Raceme* terminal, erect, from eight to ten inches long, leafless, with alternate, whitish flowers.—*Peduncles* scattered, clavate, angular, smooth, three-fourths of an inch long, becoming more spreading and lengthening as the fruit advances to maturity, with a linear, acute, gland-striped bracte at the base, scarcely measuring half its own length.—*Calyx* shorter than the corolla; *laciniæ* lanceolate, acute, gland-striped, membrane-margined.—*Corolla* glandular at the base; *segments* lanceolate, acute, marked with a few linear, purple spots.—*Filaments* free, subulate, naked, almost twice as long as the corolla, spreading; *anthers* oblong, with a few glands.—*Style* columnar, as long as the stamina; *stigma* minute, round.—*Capsule* yellowish, almost twice as large as the calyx. *Seeds* minute numerous.—N. W.

## MENYANTHES. Schreb. Gen. N. 263.

*Calyx* five-parted. *Corol* monopetalous, five-parted. *Capsule* superior, one-celled. *Seeds* many, inserted on parietal receptacles.

1. *M. cristata*, R. Corom. 2. N. 105.

*Petioles* viviparous. *Leaves* round-cordate, repand. *Nectary* triple; *stigma* two-cleft.



Cumuda, *Asiat. Res.* iv. 254.

*Sans.* कुमूदती, Koomoodwatee, कुमूदिनी, Koomoodinee.

Tsjeroea-citambel. *Rheed. Mal.* 11. p. 57. t. 29.

*Beng.* Chooli.

*Teling.* Antara Tamara.

A native of pools of sweet water, where it floats, often not reaching the bottom with its roots. *Flowering* time the wet and cold season.

*Root* annual, fibrous.—*Leaves* radical, petioled, cordate, lobes overlapping a little, margins somewhat scalloped, smooth, on the upper side purplish green; size various, the larger from four to six inches long.—*Petioles* round, length various, on the upper side about two inches below the leaf there is a viviparous tuberosity, which produces the flowers as well as other leaves and roots; the old leaf and the parent petiole decaying, leave this a new plant, each petiole in succession doing the same.—*Peduncles* many, from the above-mentioned tuberosity of the petiole, one-flowered, sufficiently long to raise the flower above the water while expanded, afterwards they drop into the water, and there ripen their seeds.—*Flowers* pure white, about an inch in diameter.—*Calyx* five-leaved; *leaflets* broad-lanceolate, permanent.—*Corol* of one petal; *divisions* of the border oblong, expanding with broad, membranaceous, waved, curled, ragged margins; down the middle of each of them runs a ridge, exactly similar to one half of the divisions themselves, no hair on the flowers. *Nectary* triple; the *exterior* one consisting of white, ramous filaments crowning the mouth of the tube of the corol, as in *Nerium*; the *middle* one of five beautiful yellow, glandular bodies, which nearly fill the mouth of the tube, standing alternate with the filaments; and the *interior* one of five hairy, yellow bodies, surrounding the base of the germ.—*Filaments* inserted into the tube of the corol near its base. *Anthers* oval—*Style* short.—*Stigma* two-cleft; *segments* large, and lobate.—*Seeds* a little compressed, scabrous. *Receptacles* parietal, opposite, running down the sides of the capsules.

2. *M. indica*, Willd. Spec. i. 811.\*

*Petioles* viviparous; *leaves* round-cordate. Upper side of the *corol* hairy; *nectaries* none. *Stigma* three-lobed. *Seeds* obovate.

*Hind* and *Beng.* Bura-chooli.

*Teling.* Antara-tamara.

Nedel-Ambel, *Rheed. Hort. Mal.* 11. p. 55. t. 28.†

Cumud, *Asiat. Res.* vol. iv. p. 254. N. 30.

Like *M. cristata* it is found floating on sweet water lakes, &c. in Bengal. I never met with it on the coast. Flowering time the cold season.

*Leaves* petioled, round-cordate; margins slightly waved, somewhat fleshy, smooth, when full grown about a foot or more each way.—*Petioles* round, length various; from a tuberosity near the apex, there issue flowers, other leaves, and roots; each leaf therefrom becoming a new plant, as in *M. cristata*.—*Calyx* from five to six-parted.—*Corol* expanding; *tube* short, yellow; border from five to six-parted, divisions lanceolate, the upper side thickly clothed with long white filaments. *Nectaries* wanting, or minute.—*Filaments* as many as the divisions of the calyx and corol, ascending. *Anthers* erect.—*Stigma* three-lobed, curled.—*Capsule* one-celled. *Receptacles* three, running down the inside of the capsules.—*Seeds* numerous, obovate.

### FAGRÆA. Schreb. Gen. N. 276.

*Calyx* five-leaved, imbricated. *Corol* infundibuliform with an imbricated five-cleft border. *Berry* oval, two-celled. *Seeds* many.

\* Curt. Bot. Mag. 658.—*Villarsia*, Ventenat.—This plant, or as I suspect a distinct species, is frequent in Nepala, and called *Laphakang* (1a signifying water in the Nawar language, *phakang*, a sort of Arum); the natives of that country eat the young stalks in their curries.—N. W.

† *Nymphæa ceramica*, Rumph. Amb. vi. 173. t. 72. f. 3.—N. W.

1. *F. fragrans*, R.

Arboreous. *Leaves* opposite, lanceolate. *Corymbs* axillary, stamina ascending.

A tree of a moderate size, found by Dr. William Hunter in one Garden only on the Island of Pullo Penang; to which it was originally brought from China. It blossoms in May and June, and ripens its fruit in September and October.

*Branches* numerous, spreading in every direction.—*Leaves* opposite, decussate, patent, short-petioled, broad-lanceolate, taper, obtuse-pointed, entire, nerveless and smooth on both sides; from four to five inches long, and about one and a half broad.—*Petioles* short, smooth, enlarged at the base into a stem-clasping ring, which in the dried specimens are encrusted with a clear yellow resin.—*Corymbs* peduncled, axillary, nearly as long as the leaves, decomposed, decussate, smooth.—*Flowers* numerous, large, whitish yellow, fragrant.—*Bractes* small, permanent.—*Calyx* beneath, deeply five-parted, or rather five-leaved; permanent. *Leaflets* sub-rotund, imbricated, smooth, many times shorter than the tube of the corol.—*Corol* one-petalled. *Tube* between campanulate and infundibuliform. *Border* contorted, five-parted; *divisions* ovate-oblong, expanding.—*Filaments* five, ascending, inserted, in the mouth of the tube, and much longer than the corol. *Anthers* incumbent.—*Germ* above, ovate. *Style*, the length of the stamens. *Stigma* enlarged, entire.—*Berry* oval, a little pointed, size of a currant, smooth, red, pulpy, two-celled.—*Seed* several in each cell, angular, and scabrous.

2. *F. elliptica*, R.

*Leaves* opposite, short-petioled, broad-elliptic, smooth, and firm. *Corymbs* terminal, more than super-decomposed. *Tube* of the corol cylindric.

A native of the Moluccas.

## Additions by N. W.

*S. F. obovata*, Wall.

Arboreous; *leaves* ovate or obovate, rounded with a short broad point, petioled; *peduncles* terminal, three-flowered, sub-corymbose.

Specimens were sent to me from Silhet where the tree is called *Saom* (সাঁওম.) It blossoms during the rainy season, and the fruits ripen in March. I have had others from my highly esteemed friend Mr. W. Jack, gathered together with many other interesting plants at Singapore.

A middling sized tree, with thick, obscurely four-sided branches; smooth on all its parts.—*Leaves* in approximate pairs, spreading, from ovate to obovate, with a short broad point, tapering and pointed downwards and slightly decurrent on the petiol, five or six inches long, thick, almost fleshy, without veins or nerves, shining above the rib, much elevated below.—*Petiols* thick, round, an inch long, flat-tish above, concave at the base, with a few glandular *cilia*, such as are generally found in the family of *Apocineæ*, with an intra-petiolar, erect, oval, adpressed, retuse, concave *ligula* or *stipula*, connected with that opposite to it by means of a narrow, elevated, annular margin.—*Peduncles* terminal, thick and fleshy, round, sub-corymbose, jointed, with opposite, spreading, ovate, acute branches under each division, three-flowered.—*Flowers* white, fragrant, coriaceous, as large as those of *Plumieria acuminata*, on short, thick, clavate, bi-brachiate pedicels.—*Calyx* sub-companulate, five-cleft; *laciniæ* broad-ovate, obtuse, imbricating. *Corolla* nearly two inches long, infundibuliform; tube thrice as long as the calyx, widening from the slender base to the pervious, naked throat. *Lacinia* ovate, obtuse, oblique, very spreading.—*Filaments* thread-shaped, bent downward a little above the insertion, so as to form a hook, reaching to the middle of the border of the corolla. *Anthers* fleshy, oblong, attached by their back, opening longitudinally on each side.—*Ovarium* oblong, fleshy, smooth, bilocular; ovula numerous, attached to a fle-

shy *placenta* which is united to the partition by a narrow membrane. *Style* filiform, almost as long as the filaments. *Stigma* lanceolar, smooth.—*Berry* ovate, brown, shining, smooth, crowned with a short cylindrical point, supported by the persistent calyx, on a lengthened peduncle, four-celled, with innumerable brownish seeds, immersed in a soft pulp.

*Obs.* This species is much larger in all its parts than the first, of which I have had abundant specimens gathered at Penang by Mr. Jack. It comes unquestionably very near to *F. zeylanica*, but seems to differ in being arboreous, and having rounded leaves with a broad apex, on pretty long petiols; perhaps they are, after all, one and the same species. Conf. Sir J. E. Smith in Rees's Cyclopaedia in loco.—N. W.

#### 4. *F. auriculata*, Jack.

Arboreous? *Leaves* approximate, oblong-elliptic, acute, tapering downwards, petioled; *stipules* with two large, oval, pendulous lobes on each side; flowers axillary.

Specimens without corols, but sufficiently marked to indicate the genus, and to distinguish them as forming a very remarkable species, were gathered at Singapore and communicated by Mr. Jack.

*Branches* very stout, covered with grayish bark, marked with vestiges of the insertion of fallen leaves.—*Leaves* in most approximate pairs, crowded toward the extremity of the branches, exceedingly firm and leathery, from six to twelve inches long, of an elliptic-oblong form, acute, measuring toward their extremity from three to four inches in breadth, from thence tapering downwards, perfectly smooth and entire, with sub-transversal, remote, very fine nerves, scarcely at all elevated above the surface, veinless; rib strong and carinated.—*Petiol* very thick, scarcely an inch long, broadish, and margined by the decurrent base of the leaf, convex on both sides.—*Stipula* very large and thick, consisting of an intra-petiolar, broad, two-lobed process, which descends on

both sides of the base of the petiol, loosely embracing it in the form of two pendulous, free, oval, or semilunar lobes, of the size of the nail of the middle finger, convex without, concave on the inner side, which is parallel to the branch; the outer margin almost circular, the lower extremely broad and rounded, free; the upper narrower, partly attached to the petiol, and partly continuous with the intra-petiolary process.—In each of my specimens there is in one of the uppermost axils a very thick and woody club-shaped peduncle, about two inches long, at the end nearly half an inch in diameter, with a pair of opposite, ovate, short, thick bractes at the middle.—*Calyx* consisting of five leathery, roundish, obtuse, most spreading laciniae, each measuring an inch, with sharp margins, which probably had supported a proportionally large fruit. Flowers not seen.—N. W.

5. *F. racemosa*, Jack.

Shrubby, erect? leaves broad-oval, rounded at both ends, subsessile; *raceme* terminal, shorter than the leaves, consisting of opposite fascicles of sub-sessile flowers.

Found by Mr. Jack in the Island of Penang.

*Branches* round, smooth, pale. *Leaves* in somewhat remote pairs; firm, and coriaceous, mostly broad-oval, from 6 to 7 inches long and 4 or 5 wide; obtuse or slightly pointed, rounded at both ends, with strong and prominent nerves below; on being dried they assume a yellowish taint like those of most species of *symplocos*. Sometimes they are of an oblong form.—*Petioles* very short and thick, scarcely exceeding one-third of an inch in length, with a very narrow, rounded *stipulary process*, embracing the branch, and united with that of the opposite side.—*Raceme* terminal, peduncled, nodding, oblong, three or four inches long, obtuse, about two inches in diameter, crowded with most approximate fascicles, each consisting of nine sub-sessile, white flowers, disposed in threes.—The lowest fascicles remote from the rest. Common peduncles rather slender, round, two or three inches long, naked; partial ones exceedingly thick, with op-

posite, broad-ovate, short bractes under their articulated insertion.—*Calyx* oval, small, with obtuse laciniae.—*Corol* about an inch long, the tube three times the length of the calyx, cylindric, widening towards the sub-companulate border, which consists of five, sometimes of six or seven obovate, crenulate laciniae.—*Stamina* reaching above the throat; filaments slender and weak, descending a short distance from their insertion and afterwards ascending again as in the two first species.—*Ovarium* bilocular, many-seeded: style about the length of the stamina.

#### 6. *F. volubilis*, Wall.

Shrubby, climbing; *leaves* ovate or obovate, acute, tapering downwards, petioled; *raceme* terminal, lax, longer than the leaves, with remote racemuli of peduncled flowers.

A native of Bencoolen, from whence Mr. Jack indulged me with beautiful fruit-bearing specimens.

*Branches* pallid, round, slender, apparently dichotomous, variously bent, climbing.—*Leaves* somewhat remote, mostly obovate, sometimes broad-oval, always acute, tapering towards the base, from eight to twelve inches long, and from four to seven inches broad, in other respects resembling those of the last species.—*Petioles* an inch long, round, and stout, the upper half marked on each side with a narrow margin, which originates from the slightly decurrent base of the leaf.—*Stipule* as in the preceding.—*Raceme* terminal, lax, variously bent, a foot or more in length, three inches in diameter, on a short peduncle, composed of numerous, opposite, twice trichotomous, spreading *racemuli*; the lowermost are remote on longish peduncles, the rest sub-sessile, and becoming more approximate, disappearing towards the extremity of the raceme where the flowers are solitary and opposite.—*Common peduncle* slender, round, woody, with a pair of lanceolate, recurved, acute bractes under each racemuli.—*Pedicels* very short and thick, with bractes as in the preceding species.—*Flowers* not seen.—*Berry* oval, as large

as a gooseberry, about half the size of my *F. obovata*, rust-coloured, smooth, pointed with the truncate base of the style, bilocular; *calyx* with spreading, rounded laciniae, on a clavate pedicel about an inch in length.—*Cortex* leathery, brown, half a line in diameter.—*Pulp* none.—*Receptacle* oblong, broad, fleshy, convex and notched for the reception of the seeds; the inner side smooth and concave, longitudinally adfixed by a narrow lamina to the side of the thin dissepiment.—*Seeds* most numerous, ovate, angular, of a reddish brown colour, shining, scabrous with copious dots. *Integument* simple, thickish, crustaceous.—*Perisperm* conform to the seed, fleshy, pellucid, water-coloured.—*Embryo* cylindrical, aqueous, occupying the greater part of the axis of the perisperm; *cotyledons* exceedingly small; *radicula* centrifugal.

*Obs.* Mr. Jack's *F. racemosa* is so like this species in general appearance that I am somewhat doubtful of its being distinct. The former seems not to be climbing, while this appears to be so to a great extent. The leaves of that are rounded at both ends, very short-petioled; of this they are decidedly acute at both ends and tapering towards the base, on pretty long petioles.—The raceme in that is much shorter, and more crowded with almost sessile flowers, whereas, in *F. volubilis* they are very long and slender, with remote racemuli of pedicelled flowers. It must however be observed that the racemes in my specimens of *F. racemosa* are very young, only a few flowers having opened; it is likely, therefore, they would have lengthened considerably as they advanced in age, and that, when in fruit, the fascicles would have become racemuli of pedicelled calyces.

*PLUMBAGO. Schreb. Gen. N. 281.*

*Calyx* gibbous, five-toothed. *Corol* funnel-shaped. *Stamina* inserted into the tops of the five nectarial scales which embrace the germ.—*Stigma* five-cleft. *Seed* one, oblong, coated.



1. *P. zeylanica*, Willd. Sp. i. 837.

Shrubby. *Leaves* ovate-oblong, smooth. *Racemes* besprinkled with glutinous hair. *Bractes* three, unequal.

Tumba-codivelli, *Rheed. Mal.* 10. 15. t. 8.

Chitraca, *Asiat. Res.* iv. 255.

*Sans.* पाठिन, Pathin, चित्रक, Chitraka; also बह्नि, Vuhni, and all the other names of fire.

*Beng.* Chitra, Chita.

A perennial shrubby plant, native of India.\*

*Stems*, many, jointed, smooth, somewhat declining, ramous, flexuous, from two to four feet long, and about the thickness of a large quill. *Branches* nearly bifarious.—*Leaves* alternate, short-petioled, ovate, waved, smooth, entire, about two to three inches long, and one and a half, or two broad.—*Petioles* short, stem-clasping, channelled, or sub-winged.—*Stipules* none.—*Racemes* axillary, and also terminal, covered with much short glutinous hair.—*Flowers* pure white.—*Bractes* three-fold, one-flowered, the outer one is ten times larger than the lateral one, they are covered with the same gluten as the peduncle of the raceme, sometimes there is a fourth linear bracte pressing the calyx.

2. *P. rosea*, Willd. Sp. i. 836. *Asiat. Res.* xi. 175.

Shrubby. *Leaves* ovate-oblong, smooth. *Racemes* smooth; *bractes* three, smooth.

Radix vesicatoria, *Rumph. amb.* v. 453 t. 168.

Schetti codiveli, *Rheed. Mal.* xii. 17. t. 9.

*Beng.* Rukta-chitra, Lall-chita.

Native of Coromandel, and other parts of India.

Perennial, shrubby; *stems*, *branches*, *leaves*, and *petioles* as in the preceding.—*Racemes* axillary, and also terminal, smooth.—*Flowers* large, of a bright beautiful red.—*Bractes* three-fold, one-flowered,

\* Very common about Katumanda, where it is called Kooaboo.—N. W.

equal, smooth; the inner or upper two united between the flower and rachis.

*Obs.* The specific distinguishing marks between these two species, according to my observation, depend on the racemes and bractes, colour not being a specific mark.

*PORANA.* Schreb. Gen. N. 286.

*Calyx* five-leaved, growing in the pericarp into cariosé wings. *Corol* companulate. *Germ* one-celled, from two to four-seeded. *Utriculus* one-seeded. *Embryo* erect, curved, and corrugated.

1. *P. paniculata*, R.

Shrubby, twining. *Leaves* exactly cordate, entire, hoary. *Panicles* terminal, and axillary. *Corol* sub-entire. *Style* short, simple.

A native of the interior parts of Bengal, and particularly plentiful upon the ruins of Gowr, and the Rajamahl hills.\* Flowering time the cold season; seeds ripe in March.

*Stem* woody, divided into numerous, very long, scandent, and twining, stout, woody branches, which extend over the largest trees, or whatever else they meet with, their extremities drooping beautifully. *Bark* of the woody parts ash-coloured, and uneven; that of the young shoots clothed with whitish soft down.—*Leaves* cordate, entire, fine-pointed, villous on both sides, but particularly so underneath, where they are also hoary, from one to four inches each way.—*Panicles* terminal, and from the exterior axills, pendulous or drooping.—*Flowers* very numerous, small, pure white.—*Calyx* five-leaved, downy; leaflets unequal, but all much shorter than the corol.—*Corol* one-petalled, companulate, margins slightly five-lobed.—*Filaments* five, inserted into the bottom of the tube of the corol. *Anthers* linear, half hid.—*Germ* ovate, one-celled, ovula four, attached

\* I have specimens collected by Dr. Govan at Saharunpore.—N. W.

to the bottom of the cell. *Style* short, and simple. *Stigma* of two, large, round, lobes.—*Capsule* (*utriculus*,) ovate, one-celled, evalvular, membranaceous, brittle, villous, size of a small pea, surrounded by the remaining calyx, three of the five leaflets thereof becoming scariose are enlarged into as many oblong, lanceolate wings many times longer than the capsule itself; the other two continue of their original length, but so contracted in breadth as to be filiform.—*Seed* solitary, affixed to the base of the capsule. *Perisperm* and embryo as in the *Convolvulaceæ*, to which order it belongs.

*Obs.* A large plant, from thirty to forty feet long, covering a mango tree, is now in full blossom before me, and is certainly a most lovely sight; the long pendulous extremities of the branches, with their numerous panicles of small, white flowers, and hoary leaves, render it a very pleasing object.

2. *P. volubilis*, *Burm. Ind.* 51. t. 21. f. 1. *Willd. Sp.* i. 843.

Shrubby, twining. *Leaves* cordate, entire, smooth. *Panicles* axillary, and terminal. *Corol* five-cleft. *Style* bifid.

A native of various parts of India, but scarce in Bengal, flowers during the cold season in the Botanic Garden, and when in that state is uncommonly beautiful.

*Trunk* and *branches* ligneous, twining to a very considerable extent, over trees, &c.—*Leaves* alternate, petioled, cordate, entire, smooth, pointed, from two to three inches long, and from one to two broad.—*Panicles* axillary, and terminal, drooping; *ramifications* thereof alternate, and downy.—*Flowers* numerous, small, white, inodorous, pedicelled.—*Bractes* small, villous, several on the base of the pedicells, and one longer than the others under its insertion.—*Calyx* of five, oblong, scariose leaflets, which, are nearly as long as the corol.—*Corol* campanulate; border five-cleft; divisions oblong, and obtuse.—*Filaments* five, inserted near the bottom of the tube of the corol, and nearly as long as the corol.—*Germ* ovate, one-celled, containing four ovula, attached to the bottom of their cells. *Style*

half two-cleft, one of the divisions shorter. *Stigma* headed, somewhat two-lobed.—*Utriculus* surrounded with five-scariose, equally enlarged, permanent leaflets of the calyx; round, size of a small pea, smooth, brown. The rest as in the former species.

### 3. *P. racemosa*, R.

Annual, twining, filiform. *Leaves* cordate, the cauline ones petioled, the floral ones stem-clasping. *Racemes* axillary and terminal. *Corol* five-cleft.\*

A native of Nepala, from thence introduced by Dr. F. Buchanan, into the Botanic Garden, where it blossoms during the dry season.

*Stems* annual, twining, slender, pretty smooth.—*Leaves* cordate, entire, obtuse-pointed, soft, and smooth, the cauline ones are petiolated; the floral ones sessile, indeed, stem-clasping.—*Racemes* axillary, and terminal, long-peduncled, few-flowered.—*Bractes*, the lower ones like the floral leaves, but smaller, those of the superior flowers very small.—*Flowers* alternate, pedicelled, small, white.—*Calyx* five-leaved; *leaflets* sub-lanceolate, growing with the pericarp into five, scariose wings.—*Corol* sub-campanulate; *tube* short, and rather gibbous; *border* five-parted; *segments* oblong.—*Filaments* short, unequal, inserted into the tube of the corol near its bottom. *Anthers* ovate, within the tube.—*Germ* ovate, one-celled, containing two seeds, attached to its bottom. *Style* length of the stamens. *Stigma* oval, apex two-lobed.—*Utriculus* oval, smooth, of a very delicate, entire, membranaceous texture, surrounded by the five leaflets of the calyx, now enlarged into five scariose, cuneiform wings.—*Seed* as in the preceding species.

### 4. *P. grandiflora*, Wall.

Hairy. *Leaves* cordate, caudate-acuminate. *Racemes* axillary

\* I have had numerous specimens of this plant from the vicinity of Katumanda under the name of *Lahara* which, however, is the term applied in the Newaree language for the word climber.—N. W.

and terminal, longer than the leaves, few-flowered. *Corolla* infundibuliform; *tube* many times longer than the calyx; *border* flat, spreading. *Style* and stigma intire. *Wings* of the fruit-bearing calyx very large, oblong, unequal.

A native of the environs of Katumanda, especially the mountains of Shivapoor,\* blossoming during the rainy season, and ripening its fruit in January and February.

This noble plant is so like an *Ipomoea* in habit and flowers that for a long time I took it to be a species of that extensive genus; nor did I discover my error until I had obtained its fruit, which at once decided it to be a *Porana*.—*Branches* slender, angular, purplish, twining to a considerable extent; beset with soft curved shining hair, as are also all the other parts.—*Leaves* remote, ovate-cordate, from four to six inches long, tapering considerably, ending in a most slender linear acumen, measuring an inch in length; *sinus* at the base broad with large round lobes; membranaceous, hairy on both sides, particularly while young; margins entire, slightly ciliate; seven-nerved, the exterior nerves uniting at the base, reticulate-venous.—*Petioles* slender, furrowed, about as long as the leaves.—*Peduncles* axillary and terminal, slender, spreading, almost twice as long as the leaves, solitary, terminating with a raceme of six or eight very large and showy, rose-coloured, short-peduncled, inodorous flowers. *Bractes* minute, linear, densely hairy; one under each pedicel.—*Calyx* tubular, small, purplish, scarcely equalling its pedicel, deeply divided into five linear, acute, fleshy, ciliate, somewhat unequal *lacinae*.—*Corolla* infundibuliform; *tube* very slender, two-thirds of an inch long, the base slightly swelling and hairy within; the upper end rather suddenly widening into the flat, most spreading, plicated *limb* measuring more than an inch in diameter, obscurely divided into five retuse lobes, each terminating with a subulate villous point; *throat* narrow.—*Stamina* scarcely reaching to

\* Commonly called *Sheopore*.

the middle of the tube; *filaments* subulate, fleshy at the base, inserted a little above the pubescent bottom of the tube, shorter than the erect, linear *anthers*.—*Pistil* rather shorter than the stamens, persistent, smooth. *Ovarium* ovate, surrounded by a very narrow nectarial swelling, one-celled, two-seeded; *ovula* semi-ovate, erect, contiguous.—*Style* short. *Stigma* oblong, intire, obtuse.—*Utriculus* very thin and membranaceous, slightly venous, of the size of a large marrow-fat pea, smooth, terminated by the persistent style, which is broad and compressed at the base, running down on each side with a very fine line dividing the fruit into two equal portions, supported by the scariose calyx, which is enlarged into five linear-oblong, five-nerved, reticulated, straight, unequal *wings*, measuring nearly an inch in length, the apex is rounded with a subulate point.—*Seed* brown, round, smaller than the utricle, attached to its bottom by a broad basis which has on one side a flattened rudiment of the abortive ovulum. The interior structure I have not been able as yet to ascertain; but from an examination of some partly worm-eaten seeds I cannot doubt of the existence of the contortuplicate, erect embryo.—N. W.

### NEUROPELTIS, Walt.

*Calyx* five-leaved, persistent, unaltered. *Corolla* infundibuliform, five-parted, plain. *Styles* two. *Stigmas* fleshy, reniform. *Capsule* one-seeded, supported by the greatly enlarged membranaceous *floral bracte*.

This new genus comes very near to *Bonamia*, Aub. du Petit Thouars, Veg. Afr. i. p. 17. et 32, t. iv;\* *Breweria*. Brown, Prodr. Nov. Holl. i. 487, and to *Perana* all three belonging to the natural order of *Convolvulaceæ*, Juss, which they connect with the *Bora-*

\* Marked erroneously (v.) in the reference, and (viii.) on the plate itself of that most valuable work.—N. W.

*gineæ* by their affinity to *Cordia*. From the first mentioned genus it differs in having a five-parted infundibuliform corol bearing the short stamina near its base; two very short styles, reniform stigmas, a winged, one seeded capsule, and naked seed. From the two others it differs in its habit, in the corolla not being plicated and in the structure and appendage of its fruit. In the artificial system it should properly be placed in Pentandria Digynia; I have however, preferred introducing it immediately after *Porana*, which is its natural place.

1. *N. racemosa*, Wall.

A weak spreading shrub, discovered at Penang in 1819 by my most liberal friend Mr. W. Jack, who kindly communicated specimens and part of the following description.

*Branches* woody, round, ash-coloured, glaucous, covered with numerous, white, elevated dots; while young pubescent.—*Leaves* alternate, copious, approximate, petioled, ovate, entire, acute at both ends, tapering at the upper extremity, from three to four inches long, coriaceous, shining and somewhat canaliculate above, almost smooth, with numerous impressed dots, which are only visible under a lens, and not perforating the under surface, which is pubescent, reticulated, with elevated smooth ribs and sub-opposite, parallel, oblique nerves, uniting into sub-marginal arched veins.—*Petioles* deeply furrowed, smooth, scarcely half an inch long.—*Stipulae* none.—*Racemes* axillary, erect, four or more from the same bud, two or three inches long, shorter than the leaves, sessile; every part of them densely covered with ferruginous, adpressed, shining hairs.—*Common peduncle* or *rachis* filiform, naked.—*Flowers* small, scattered, not numerous, on short pedicels, to the middle of each of which is attached a small ovate-lanceolate, acute bracte, decurrent almost to the base, and giving them the appearance of being clavate.—*Calyx* somewhat shorter than the pedicel, half hid by the bracte, consisting of five equal, oval, obtuse, imbricated, membrane-margined,

ciliated leaves, which like the corolla are hairy and ferruginous on their outside, and smooth within.—*Corolla* twice as long as the calyx not plicated, divided below the middle into five lanceolate, acute *lacinae*, which during their aestivation are valvate.—*Stamens* five, smooth, alternating with, and shorter than, the segment of the corol; *filaments* obscurely subulate, arising from five-villous tubercles immediately beneath the fissures of the corolla; *anthers* linear, deeply bifid at their base, erect, exceeding their filaments in length, bursting along their margins from the base to the apex.—*Ovarium* ovate, hairy, two-celled, four-seeded; *ovula* erect; *styles* distinctly two, diverging, pubescent, shorter than the stamens; stigmas large, fleshy, recumbent, reniform, crenulate.—*Capsule* round, membranaceous, of the size of a pea, twice as large as the calyx, which supports it, smooth, attached by a decurrent pedicel considerably below the centre of the floral bracte, which has now become almost orbicular, of an extremely delicate and membranaceous, sub-diaphanous texture, measuring two inches in diameter, smooth, entire, retuse or emarginate at both ends, most beautifully reticulated and veined; the middle rib, the lower portion of which consists of the decurrent pedicel, elevated beneath, as are also the sub-opposite, approximate nerves; those about the pedicel radiating, those above them oblique, all of them uniting in sub-marginal arches. *Cotyledons* according to Mr. Jack are contortuplicate as in *Porana*.—N. W.

*CONVOLVULUS. Schreb. Gen. N. 287.*

*Calyx* five-leaved. *Corol* campanulate. *Germ* two-, rarely, three-celled. *Stigma* from two to three-lobed. *Capsule*, two or three-celled; cells two-seeded. *Embryo* erect, curved; *cotyledons* corrugated.

N. B. In far the greater number of our East Indian *Convolvuli*, and



*Ipomoea*, the stigma consists of two globular heads; each globe an aggregate of minute, roundish, pellucid, glutinous tubercles. In the specific character, therefore I take no notice of the stigma when so formed; it will consequently be understood to consist of two round lobes, when not mentioned. In this genus there is but one species (*C. flagelliformis*,) that can be said to have any thing like an entire stigma and in *Ipomoea* only one, viz. *I. phoenicea*. I do not therefore think it would answer any valuable purpose to make a double stigma the essential, generic mark of *Convolvulus*, and a single capitate one, that of *Ipomoea*. But those with an entire seed vessel, may be advantageously formed into a distinct family, which I have done in the next genus, *Leptosomia*.

*Sect. 1st. Twining with undivided leaves.*

*1. C. gangeticus, R.*

Perennial, twining, extensive. *Leaves* round-cordate, entire, obtuse. *Peduncles* solitary, from one to four-flowered. *Leaflets* of the calyx reniform, increasing in size with the capsule, and hiding it. *Corol* with nearly entire margins.

A native of the banks of the Ganges, where it blossoms during the cool season; when its extended branches, and numerous, very large, bright, pink-coloured flowers are highly ornamental; seeds ripe in March.

*Stems* shrubby, twining up and over trees to a great extent; *young shoots* round, pale green, and a little hairy.—*Leaves* petioled, re-entering, round-cordate, entire, often emarginate, nearly smooth above; villous, and dotted underneath and there strongly marked with many, nearly simple, parallel veins; length and breadth about three or four inches.—*Petioles* channelled, nearly as long as the leaves.—*Peduncles* axillary, solitary, shorter than the petioles, from one to three-flowered.—*Bractes* oblong, opposite, caducous at a very ear-

ly period.—*Leaflets* of the calyx obovulate, reniform, emarginate, with thin, membranaceous edges, increasing in size with the fruit, and covering it completely at all times.—*Germ* four-celled, with one ovulum in each cell, attached to the bottom, *stigma* of two round lobes.—*Capsules* entirely hid in the calyx, which together with them is the size of a large nutmeg.—*Seeds* covered with a dense coat of fine brown down, and hairy round the umbilicus.

2. *C. semidigynus*, R.

Perennial, twining. *Leaves* cordate villous. *Peduncles* three or more-flowered. *Style* half two-cleft. *Stigmas* globular.

A native of the Shree-nugur mountains, from thence Captain Hardwicke sent seeds to the Botanic Garden, where the plants, three years old when this description was taken, are very extensive and in full blossom in December.

*Stems* woody, twining; young parts villous.—*Leaves* alternate, petioled, cordate, and ovate-cordate, entire, pointed, of a very soft, villous texture, particularly underneath; three or four inches long, and about two broad.—*Petioles* half as long as the leaves, villous.—*Peduncles* axillary, solitary, shorter than the petioles, round, downy, each bearing three or more large, pure white, inodorous flowers.—*Bractes* ovate, caducous.—*Calyx* downy.—*Corol* villous on the outside.—*Anthers* with their points bent back towards the bottom of the corol, and their sagittate bases pointing to its mouth.—*Germ* bearded.—*Style* two-cleft. *Stigma* globular.

3. *C. binectariferus*, Wall.

Twining, hairy. *Leaves* cordate, acuminate, five-nerved, rather longer than their petioles; the lowermost with an acute lobe on one or both sides. *Corymbs* axillary, shorter than the petioles, dense, on a flattened *peduncle*. *Corolla* thrice as long as the equal, ovate *calyx*. *Exterior nectary* five-parted, valvular, attached to the base of the corolla, bearing on its back the short filament; *interior* fleshy, annular,

Communicated to me by the late Mr. M. R. Smith, from Silhet, in November 1815.

*Stem* slender, scarcely thicker than a packthread, seemingly herbaceous, covered with long whitish hair, as are also all the other parts of the plant; divided into a few branches.—*Leaves* ovate-cordate, mostly entire, those of the lower part of the plant subtrilobate or with a broad acute lobe on one of the sides, from five to seven-nerved, hairy on both sides, glaucescent underneath.—*Petioles* slender, round, furrowed, about two-thirds the length of their leaves.—*Stipules* none.—*Corymbs* solitary, many-flowered, sub-capitate, hairy, on a thick, flattened, slightly bitid *peduncle*, an inch long.—*Flowers* rather small, pure white, on short capillary pedicels, each having a pair of opposite small lanceolate *bractes* at the base.—*Calyx* campanulate, very hairy without; *leaves* lanceolate, acuminate, membrane-margined, equal.—*Corolla* campanulate, an inch and half long, somewhat widening at the base; limb plicate, slightly five-lobed, acute.—*Filaments* short, smooth, subulate, attached to the centre of the convex back of five lanceolate, acute, extremely villous nectarial valves, which are inserted on the base of the corolla, converging over the ovarium.—*Anthers* erect, ovate, two-lobed, below the middle of the corolla.—*Ovarium* ovate, smooth, obscurely four-furrowed, surrounded by a narrow, entire, fleshy, yellowish, annular *nectary*, two-celled, four-seeded; ovula cylindric, erect.—*Style* filiform, shorter than the stamens.—*Stigma* papillose, capitate, bilobed. Fruit not seen.—N. W.

#### 4. *C. fastigiatus*, R.

Twining, perennial, smooth. *Leaves* cordate, smooth. *Cymes* long; *peduncles* many flowered.

A native of the interior parts of Bengal; in flower, and full foliage most part of the year.

*Root* perennial.—*Stems* and *branches* numerous, twining; all the sub-ligneous parts scabrous; young shoots running over bushes to an

extent of many fathoms, generally tinged with purple. Long runners issue from the top of the root, and spread along the surface of the earth.—*Leaves* cordate, in the young luxuriant shoots and runners they are often variously lobate, or have their posterior lobes angular; all are smooth on both sides from two to four inches each way, and like the tender branchlets often tinged with purple, particularly the margins, veins and nerves; there are two round, smooth, rust-coloured glands on the sides of the base of the nerve, where it joins the *petioles*, which are from one to six inches long.—*Peduncles* small, deciduous.—*Calyx* smooth, leaflets obovate, acuminate, and very small in proportion to the size of the corol.—*Stamina* within the tube.—*Stigma* of two round lobes.—*Capsules* smooth, membranaceous, from two to four-lobed with a single, dark brown or black, smooth seed in each.

5. *C. maximus*, Willd. *Sp. Pl.* i. 853.

Perennial, twining. *Leaves* ovate, entire. *Peduncles* many-flowered, longer than the leaves. *Seeds* woolly.  
A native of Coromandel.

6. *C. malabaricus*, Willd. *Sp. Pl.* i. 857.\*

Perennial, twining, every part smooth. *Leaves* cordate, entire. *Peduncles* many-flowered.

Kattu-Kelengu, *Rheed. Mal.* xi. 105. t. 51.

A very extensive, perennial species, found in Mysore by Dr. B. Heyne. In the Botanic Garden it began to blossom in February, when the plants were four years old.

*Stem* and larger *branches* ligneous, and clothed with spongy, uneven, ash-coloured bark; twining over trees, &c. to the extent of several fathoms; *young shoots* smooth, deep green; every part, on being wounded, discharges a large quantity of dull-coloured, clammy

\* *Ipomoea*, Syst. Veg. iv. 235.—N. W.

juice, which instantly becomes of a deep brown colour.—*Leaves* long-petioled, cordate, entire, smooth on both sides, from three to six inches long, and nearly as broad.—*Peduncles* axillary, solitary, smooth, many-flowered; sometimes terminal and paniced; *pedicels* clavate.—*Flowers* rather small; the bottom of the bell deep purple; *throat* pink with the margins paler, almost white, and slightly ten-lobed.—*Calyx* consisting of five, smooth, obtuse, oval leaflets.—*Filaments* smooth.—*Style* longer than the stamina. *Stigma* of two round lobes.

7. *C. blandus*, R. *Herb. Banks.*

Perennial, twining, smooth. *Leaves* oblong-cordate, smooth. *Stipules* recurved. *Peduncles* as long as the petioles, many-flowered. *Lobes* of the corol obcordate. *Stigma* of two round lobes.

A native of the mountainous parts of the Circars.

*Stem* twining, running to a great extent, round, smooth.—*Leaves* alternate, petioled, oblong-cordate, pointed, entire, smooth, from three to four inches long.—*Petioles* short, channelled, smooth.—*Stipules* small.—*Peduncles* axillary, as long as the petioles, erect, rigid, round, smooth, many-flowered, umbel-like.—*Flowers* large, pure white; *lobes* rounded, and emarginate. *Stigma* two-lobed; *lobes* globular.

*Obs.* There is a variety of this, if not a distinct species, which differs from it in no other respect, than in being wholly covered with soft hairy down.

8. *C. laurifolius*, R.

Perennial, twining. *Leaves* from ovate to elliptic, with simple and parallel veins. *Peduncles* axillary, many-flowered. *Capsules* fleshy.

A native of Mysore, and from thence introduced into the Botanic Garden at Calcutta by Dr. B. Heyne, where it flowers in November. The seeds are ripe in March.

*Stems* woody towards the base, twining to a very considerable extent. *Bark* of the ligneous parts smooth; that of the young shoots armed with small, stiff, adpressed hairs.—*Leaves* alternate, petioled, from ovate to elliptic, with a few adpressed hairs scattered over both surfaces; veins simple and parallel, length from two to six inches.—*Petioles* scarcely half the length of the leaves; two dark glands at the apex, and hairy like the other tender parts.—*Stipules* none.—*Peduncles* axillary, shorter than the leaves, round, hairy, many-flowered, the divisions often accompanied with a leaf or two.—*Bractes* small, hairy, caducous.—*Flowers* of a moderate size, rosy.—*Calyx* with equal, ovate, rounded, smooth, segments; their margins coloured.—*Corol*; tube or bell sub-cylindric, the inside deep purple, the outside and border pink; lobes emarginate, and slightly separated.—*Nectary* a yellow, fleshy ring, surrounding the base of the germ.—*Filaments* inserted on the bottom of the bell of the corol, there of a purple colour and bearded. *Anthers* ovate-oblong.—*Germ* sub-ovate. *Stigma* of two globular lobes.—*Capsule* nearly round, size of a large pea, fleshy, two-celled, with two smooth seeds in each.

9. *C. parviflorus*, Willd. Sp. Pl. i. 856.

Annual, twining. *Leaves* cordate, smooth. *Peduncles* as long as the petioles, many-flowered; lobes of the corol pointed. *Stigma* two-cleft, lobes revolute.

*Ipomoea paniculata*, Burm. Fl. Ind. p. 50. t. 21. f. 1. (bad.)

A native of hedges, &c. Flowering time the cool season.

*Stems* twining, annual, round, sometimes slightly hairy.—*Leaves* alternate, petioled, exactly cordate, entire, fine-pointed, sometimes very slightly hairy, from one to four inches long.—*Peduncles* axillary, rather longer than the petioles, erect, many-flowered, umbel-bearing.—*Flowers* pure white, lobes acute.—*Stigma* two, clubbed, revolute.

10. *C. calycinus*, R.

Perennial, twining, hairy. *Leaves* cordate, acute. *Peduncles*

from two- to three-flowered. *Exterior* three leaflets of the calyx sagittate, ciliate, as long as the gibbous tube of the corol. *Fruit* drooping.

A native of the interior parts of India; from Cawnpore Captain Hardwicke sent plants to the Botanic Garden, where they blossom about the beginning of the cool season.

*Stem* twining, perennial: tender shoots very hairy.—*Leaves* cordate; entire, acute; lobes large, and rounded, a few distinct hairs on the nerves and veins; from three to six inches long, and from two to four broad.—*Petioles* hairy, slightly channelled, shorter than the leaves.—*Peduncles* axillary, solitary, about as long as the petioles, bearing two, or three alternate, pedicelled, rather small, pure white flowers; after the flowers drop the pedicels become drooping.—*Bractes* cordate, a few scattered over the peduncles, and pedicels.—*Calyx*, leaflets as long as the tube, ciliate; the exterior sagittate.—*Filaments* smooth.—*Germ* on a nectarial pedicel.—*Stigma* of two round lobes.

11. *C. obscurus*, Willd. Sp. Pl. i. 852.\*

Annual, filiform, sometimes villous. *Leaves* exactly cordate, entire. *Peduncles* jointed, clavate beyond the joint, after the flower decays this part droops; one-flowered, lobes of the corol emarginate. *Seeds* downy.

A native of various parts of India, blossoming in Bengal during the rainy and cool seasons.

*Obs.* In Dillenius's figure of *C. obscurus*, which is the only species I can compare this plant to, the lobes of the corol are acute; here they are emarginate, hence I conclude they are different. In the *Banksian herbarium* either this or one much like it is named *C. funicularis*.

\* *Ipomoea*, Syst. Veg. iv. 236.—N. W.

12. *C. spæthorocephalus*, R.

Annual, twining, villous. *Leaves* cordate-sagittate; lobes rounded. *Flowers* numerous, sessile, on sub-sessile, round, axillary heads.

A native of the interior parts of Bengal. Flowering time from the close of the rains in October till January.

*Root* annual.—*Stem* and *branches* twining, round; young shoots clothed with short soft hairs.—*Leaves* sagittate-cordate, posterior lobes large, and rounded, both the sides and margins somewhat hairy; length from one to four inches.—*Petioles* hairy, channelled, about half as long as the leaves.—*Peduncles* axillary, solitary, very short, or almost wanting, bearing many small, rose-coloured, sessile flowers, forming globular heads.—*Bractes* or involucre many, linear, recurved.—*Calyx*, leaflets as long as the corol, hairy, tapering to a rather long, recurved point.—*Corol* having the border slightly marked with ten indentures.—*Anthers* half hid in the tube of the corol.—*Stigma* of two round lobes.—*Capsule* globular, villous, size of a marrow-fat pea, two-celled, with two light-coloured seeds in each.

*Obs.* There is a variety of the above, if not a distinct species, with white flowers, in round sessile heads, and having narrower leaves; in other respects they exactly agree; both are natives of Bengal and both are now growing luxuriantly in the Botanic Garden. Compare them with *Ipomoea tannifolia*.

*Additional observation by N. W.*

I have had abundant specimens of this elegant species gathered in the valley of Nepala during the rains.—*Root* fibrous.—The whole plant more or less densely clad with soft, long, white hairs rising from minute vesicular dots; those on the stem and petioles almost always reflexed.—*Stems* very slender, purplish while young.—*Leaves* remote, varying considerably in figure, from linear to ovate, oblong, always cordate at the base, the lobes more or less converging down-



wards or diverging, giving the leaves a hastate or sagittated form. All the parts of the inflorescence densely hairy.—*Bractes* much smaller than the calyx, which consists of five unequal segments, hispid on both sides. *Corolla* hairy without, oblong, especially in the middle of the five acute short lobes.—*Stamina* unequal. It differs from *I. tamnifolia*, (Dill. Hort. Eltham. 428. t. 318. f. 410.) in the much narrower leaves and larger corols. It comes near to *C. capitatas*, Vahl. Symb. iii. 28.—N. W.

13. *C. (Ipomoea) atropurpureus*, Wall.

Twining, densely villous. *Leaves* ovate-cordate, acute or acuminate, longer than their petioles. *Flowers* aggregate, axillary, sub-sessile, with numerous involucre-formed, membranaceous *bractes*.

A native of the northern parts of Nepala, near Gosain-Than, where it blossoms in November.

*Stem* slender, round, densely covered with depressed, pale-ferrugineous, short, soft hair.—*Leaves* somewhat remote, most entire, about four inches long, generally seven-nerved, besides sending several alternating nerves from the sides of the middle rib, ciliate, hairy, especially underneath; lobes of the base large and rounded.—*Petioles* about an inch long, bearded, round.—*Stipules* none.—*Peduncles* axillary, very short, slightly bifid, bearing a few sub-sessile, large, deep purple, villous, fascicled *flowers*. *Bractes* large and numerous, lanceolate-oblong, hairy, thin and membranaceous, larger than the calyx; those within smaller.—*Calyx* consisting of five unequal, lanceolate, acuminate leaflets.—*Corolla* twice as long as the calyx, campanulate, hairy without; border obtuse, slightly five-lobed.—*Filaments* subulate, unequal, reaching to about the middle of the corolla, inserted a little above its bottom with their villous bases. *Anthers* linear.—*Ovarium* smooth, ovate, surrounded with a narrow nectary, four-celled, four-seeded. *Style* capillary. *Stigmas* two, globose.—N. W.

14. *C. pilosus*, R.

Annual, twining, every part very hairy. *Leaves* broad-cordate, entire, or slightly three-lobed, hoary underneath. *Stipules* ear-shaped. *Cymes* long-peduncled; calycine leaflets and bractes ensiform and ciliate.

A native of Mysore; the seeds were sent from thence by Dr. Heyne, to the Botanic Garden, where the plants spring up during the rains; blossoming and ripening their seeds during the cold season.

Annual. *Stem* and *branches* twining, extensive, round, very hairy, every part replete with a clammy white juice.—*Leaves* broad-cordate, sometimes a little three-lobed, on the upper side a little hairy and deep green, underneath clothed with soft white wool; length from two to six inches, breadth nearly the same.—*Petioles* about as long as the leaves, channelled, and hairy.—*Stipules* reniform, with callous, ciliate margins; they are always present where there is a peduncle.—*Peduncles* axillary, about as long as the petioles, bearing from one to ten or twelve, small, rose-coloured, pedicelled flowers.—*Bractes* opposite, with a cordate, peduncle-clasping base; long, taper, recurved points; and ciliate, callous margins.—*Flowers* numerous, of a lively pink colour, expanding about an inch.—*Calyx*; *leaflets* linear, acute, longer than the tube of the corol, on the outside glandular, and very hairy.—*Stamens* equalling the tube.—*Stigma* of two round lobes.—*Capsules* globular, half the length of the calyx.—*Seeds* four, woolly.

15. *C. Malcolmii*, R.

*Root* perennial. *Stems* twining, furrowed. *Leaves* sagittate with large, angular barbs. *Peduncles* two-flowered. *Bractes* lanceolate. *Stigma* of two linear lobes.

The seeds of this plant were brought from Persia by Major Malcolm, in 1801. The plants raised from them in the Botanic Garden, blossomed during the hot season of 1802, when they were about one year old.

*Root* perennial.—*Stems* and *branchlets* twining to an extent of six or eight feet, somewhat furrowed, twisted, and villous, herbaceous.—*Leaves* petioled, sagittate; margins a little hairy; smooth on both sides, from one to three inches long.—*Barbs* or posterior lobes dilated, spreading, somewhat acute, often dentate, and always angular.—*Petioles* scarcely half the length of the leaves, channelled.—*Peduncles* axillary, two-flowered, three times longer than the petioles, round. *Pedicels* clavate, as long as the petioles, villous.—*Bractes* two, opposite, at the base of the pedicels, lanceolate.—*Calyxine* leaflets ovate. *Corol* large, of a beautiful lively pink colour, margins almost entire.—*Filaments* not half the length of the corol, villous at the base. *Anthers* purple.—*Germ* with a yellow ring round the base. *Style* longer than the stamina. *Stigma* of two linear, spreading lobes.

*Obs.* I must leave the European Botanist to determine how nearly this is allied to *arvensis*, a plant I have never seen in India if this be not it.\*

16. *C. Medium*, Willd. *Sp. Pl.* i. 849.

Biennial. *Leaves* linear-lanceolate, stem-clasping, base dilated and dentate. *Peduncles* axillary, from one to two-flowered. *Leaflets* of the calyx lanceolate, cuspidate.

Tala-Neli, *Rheed. Mal.* xi. 113. t. 55.

Found in various parts of India, in flower during the rainy and cool seasons.

17. *C. tridentatus*, Willd. *Sp. Pl.* i. 848.†

Annual, leaves short-petioled, sub-cuneate, with sagittate, acutely dentate, posterior lobes, and a somewhat retuse, or rounded tridentate apex. *Peduncles* filiform, one-, rarely, two-flowered.

\* This species is exceedingly like *C. arvensis*, and *C. chinensis*, (Edw. Rot. Regist. 4. 322,) especially the latter, from which it seems only to differ in the dentate and angular auricles of its leaves, and the two-flowered peduncles—N. W.

† *Ipomoea*, Syst. Veg. iv. 246.—N. W.

*Evolvulus tridentus*, Burm. Ind. 77. t. 16. f. 3.

Sendera-clandi, Rheed. Mal. xi. 133. t. 65.

Found common on the coast of Coromandel, Malabar, &c.  
Flowers during the rainy season in Bengal.

18. *C. bicolor*, Willd. Sp. Pl. i. 850.

Perennial, twining, hairy. *Leaves* cordate, and generally somewhat angular, downy. *Peduncles* longer than the leaves, from one to four-flowered. *Bractes* lanceolar. *Calycine leaflets* acute and very unequal.

*Hind.* Jurud-kulmi.

Is a species common in hedges, &c. over the coast of Coromandel. Flowers during the rains.

*Stems* twining, herbaceous, round, covered with soft hair, or down, from one to two fathoms long.—*Leaves* alternate, petioled, broad-cordate, sometimes slightly and irregularly lobate, downy, from one to four inches long.—*Peduncles* axillary, twice as long as the leaves, slender, erect, downy, ending in a small head of from two to four sessile flowers.—*Bractes* lanceolate, one or two pressing on each of the calyces.—*Flowers* middle-sized, yellow, bottom of the bell, deep purple.—*Stigma* of two globular heads.—*Capsules* hairy, four-celled.—*Seeds* black, one in each cell.

*Obs.* Since writing the above description I have often met with plants, having one-, and two-flowered peduncles. It is therefore very likely that those varieties include both *C. sub-lobatus*, and *bicolor*.

19. *C. Turpethum*, Willd. Sp. Pl. i. 859.\*

Perennial. *Leaves* from broad-cordate, to arrow-shaped, angular. *Stems* three or four-angled. *Peduncles* many-flowered. *Stigma* of two round lobes. *Capsules* inflated, transparent, four-celled, one-valved.

\* *Impomoea*, Brown, Prodr. Nov. Holl. i. 485. Exo. Bot. Reg. iv. 279.—N. W.

*Sung.* Synonyma, See page 60.

*Beng.* Teoree, Dood-kulmi.

*Teling.* Tellā-tagada.

Common in hedges, &c. Flowering time the rainy season.\*

*Root* perennial.—*Stems* twining, several fathoms long, from three to four-sided, angles membrane-winged, a little downy, perennial.—*Leaves* alternate, petioled, form various, from cordate to linear, all are pointed, and lobate, or angular; behind a little downy.—*Stipules* none, but instead thereof glands.—*Peduncles* axillary, many-flowered.—*Flowers* large, white.—*Bractes* oval, concave, falling.—*Germ* elevated on a large glandular body. *Stigma* two-lobed.—*Capsules* involved in the dry calyx, absolutely four-sided, four-celled, one-valved; apex transparent.—*Seeds* round, black, one in each cell, free.

*Obs.* The bark of the roots is by the natives employed as a purgative, which they use fresh, rubbed up with milk. About six inches in length of a root as thick as the little finger, they reckon a common dose. Cattle do not eat the plant.

### *Additions by N. W.*

The drug which this plant yields is so excellent a substitute for Jalap and deserves so much the attention of practitioners that I doubt not the following account will prove acceptable. I am indebted for it to my highly esteemed friend Mr. G. J. Gordon, a Surgeon on the Bengal Establishment and one of the Commissioners of the Court of Requests at Calcutta, and the trials which I have made with the pounded root kindly communicated to me by Mr. J. Glass at Bhaugulpore, in 1817, amply corroborate it. I am informed by the last mentioned gentleman that he is in the habit of using the

\* The plant is also common about Katumanda.—N. W.

medicine very generally and with never-failing success. “*Convolvulus Turpethum*, is called *Doodh-kulmee* in Bengalee and *Hindoosthanee*, and more commonly *Teori*, of which, however, there seems to be another kind called black *Teori*. In *Umura-Kosha* the *synonymes* of the white *Teori* are *Trivrit* (from *Tri*, three, and *Vri*, to cherish), having three seed vessels; *Tripoota* (from *Tri* and *Poota*, the coat of a seed); *Tribhundee* (from *Bhudi*, to oppose, implying that it expels the three humors: bile, wind and phlegm); *Survanobhootee*, *Surula* and *Rechunee*. Mr. Wilson in his *Sungskrit Dictionary* gives *Bhungga* as a synonym, the name commonly applied to *Cannabis sativa*; also *Puripakinee* (from *Puri*, completely, and *Puch*, to ripen: a complete ripener of the humors); *Mudhiara* and *Uroong*. In the *Umura-Kosha* Nambheda I find *Sookhibhunttee*, *Trikuntec* and *Bhootee*. Ainslie’s *Materia Medica* of *Hindoosthan* has *Shevadu Vayr*, in *Tamuli*, *Tegada Vayroo* in *Telinga*, and *Tighara* in *Dukshinee*, though the Persian characters in which he writes the word make it *Tikura*.—We probably have the name *Turpethum* from the Arabic *Toorbud*, which appears to be a corruption of the indigenous *Sungskrit* name *Trivrit*. In the *Ulfaz Udeviyeh*, *Niswat* and *Nag putr* are given as *Hindee*, and *Kooturöona* and *Koombhura* as *Sungskrit* synonyms. It is the square-stalked Bind-weed of Ainslie, and *Turpethum repens foliis altheæ, vel Turpethum Indicum*, Bauh. Pin. 149.—It is a native of all parts of continental and probably of insular India also, as it is said to be found in the Society and Friendly Isles, and the New Hebrides. It thrives best in moist shady places, on the sides of ditches, sending forth long climbing quadrangular stems, which in the rains are covered with abundance of large, white, bell-shaped flowers. Both root and stem are perennial. The roots are long, branchy, somewhat fleshy, and when fresh contain a milky juice which quickly hardens into a resinous substance, altogether soluble in spirit of wine. The milk has a taste at first sweetish, afterwards slightly acid; the dried root has scarcely any perceptible taste or smell. It abounds

in woody fibres, which however separate from the more resinous substance in pounding, and ought to be removed before the trituration is completed. It is in fact in the bark of the root that all the purgative matter exists. The older the plant the more woody is the bark of the root, and if attention be not paid in trituration to the removal of the woody fibres the quality of the powder obtained must vary in strength accordingly. It is probably from this circumstance that its character for the uncertainty of its operation has arisen, which has occasioned its disuse in Europe. An extract which may be obtained in the proportion of one ounce to a pound of the dried root would not be liable to that objection. Both are given in rather larger proportion than Jalap. Like that, the power and certainty of its operation are very much aided by the addition of Cream of Tartar to the powder, or of Calomel to the extract. I have found the powder in this form to operate with a very small degree of tenesmus and very freely, producing three or four motions within two to four hours. Its being free from the nauseous taste and smell of Jalap, gives it a decided superiority over that plant. It is considered by the natives as possessing peculiar hydragogue virtues; but I have used it with decided advantage in the first stages of febrile affections."

I shall conclude this subject by subjoining the synonymes given with the usual profusion in the celebrated Sangskrit dictionary, *Umura-Kosha*, and in *Bhava-prakasha* and *Raja-Nirghanta* which, according to Mr. Colebrooke's testimony are among the best Hindoo writings on *Materia Medica*, to which I will add the virtues ascribed to our plant in the latter two treatises.

The white sort: सर्वानुभूति, *Survanoobhooti*, सुवहा, *Soovuha*, त्रिपुटा, *Tripoota*, त्रिवृता, *Trivrita* त्रिवृत, *Trivrit*, (त्रिभण्डो, *Tri-bhundee*, रोचनी, *Rochunee*, रेचनी, *Rechunee*, मालविका, *Maluvika*, मसूरी, *Musooree*, सरला *Surula*, त्रिशोळा, *Trishoura*.

The black sort : पालिंधी, Palindhee, सुषेणिका, Sooshenika, काला, Kala, मसूरविदला, Musoorvidula, अर्द्धचंद्रा, Urddhuchundra, कालमेषिका, Kalumeshika, कौशिका, Koushika.

According to the Raja-Nirghunta the Teoree is dry and hot; a good remedy against worms; a remover of phlegm, swellings of the limbs and diseases of the stomach. It also heals ulcers and is useful in diseases of the skin. It is known to be one of the best purgatives."

The Bhavaprakasha has the following observation: "The white Teoree is cathartic, its taste pungent; it increases wind, is hot and efficacious in removing cold and bile; it is useful in bilious fevers and complaints of the stomach. The black sort is somewhat less efficacious; it is a violent purgative, is good in faintings, and diminishes the heat of the body in fevers with delirium."—N. W.

*Sect. 2d. Twining with divided or compound leaves.*

20. *C. vitifolius*, Willd. Sp. Pl. i. 864.

Perennial, twining, hairy. *Leaves* cordate, five-lobed, serrulate-dentate. *Peduncles* as long as the leaves, from three to six-flowered; *leaflets* of the calyx obovate.

A native of hedges and forests; flowering in the cold season.

*Stem* twining, perennial, round, very hairy, two or three fathoms long, the extremities of the branches are often highly colored, and less hairy than the other parts.—*Leaves* alternate, petioled, broad-cordate, frequently five-lobed, remotely serrate-dentate, a little downy; size very various, being from one to six inches long.—*Petioles* of the longer inferior leaves equalling these in length; those of the floral leaves short.—*Peduncles* axillary, about as long as the floral leaves, from three to six-flowered.—*Flowers* large, bell-shaped, very beautiful, of a bright lively yellow.—*Calyx* hairy.—*Anthers* becoming spiral after opening the extremities.—*Stigma* of two round lobes.



21. *C. dentatus*, Willd. *Sp. Pl.* i. 849.

Twining, and creeping, muricated. *Leaves* cordate, three-lobed, dentate. *Peduncles* from two to three-flowered; *leaflets* of the calyx obovate.

In Bengal it is more luxuriant than on the coast; leaves generally entire, stems, &c. generally smooth, and with longer, many-flowered peduncles.

*Teling.* Talla-antoo tiga.

A native of hedges, thickets, &c. Flowering time the rainy season.

*Stems* and *branches* twining, or creeping, filiform, often perennial, coloured, armed with small inoffensive prickles, otherwise smooth, one or two fathoms long.—*Leaves* alternate, petioled, cordate, three-lobed, toothed, smooth, from one to two inches long.—*Petioles* prickly, branch-like.—*Peduncles* axillary, as long as the petioles, and like them, from two to three-flowered.—*Flowers* short-pedicelled, small, yellow.—*Filaments* woolly at the base.—*Stigma* single, large, globular.

22. *C. copticus*, Willd. *Sp. Pl.* i. 863.\*

Herbaceous, procumbent, angled. *Leaves* palmate; lobes lanceolate, serrate. *Flowers* terminal, on minute branchlets. *Calyces* murexed.

A native of pasture ground, flowering in the rains.

*Stems* procumbent, rarely twining, herbaceous, angled from the insertion of the leaves, from one to two feet long.—*Leaves* alternate, short-petioled, palmate, scarcely an inch long, lobes from five to seven, divided to near the base, lanceolate, serrate, smooth, the inner ones smallest.—*Stipules* like the leaves, but small, and sessile.—*Flowers* terminal, small, white.—*Calyx* murexed.—*Lobes* of the corol semi-orbicular with a point.

\* *Ipomoea*, Roth, *Syst. Veg.* iv. 203.—N. W.

23. *C. paniculatus*, Willd. Sp. Pl. i. 865.\*

Root tuberous, perennial, twining, smooth. Leaves palmate.

Cymes long-peduncled, capsules four-celled; seeds woolly.

Pal-modecca, Rheed. Mal. xi. 101. t. 49. (Exclude Modecca, Rheed. Mal. viii. 39. t. 20.)

*Ipomoea mauritiana*, Jacq. Collect. iv. 206.

Sung. The dark variety, विदारी, Vidaree, क्षीरशुक्ला, Ksheerushookla, इक्षुगन्धा, Ikshoogundha, क्रोष्टी, Kroshtree.

The pale variety, क्षीरविदारी, Ksheeruvidaree, महाश्वेता, Muhashweta, रिक्षुगन्धिका, Rikshugundhika, वाराही, Varahee.

Beng. Bhoomi-koomra.

Teling. Matta-pal-tiga.

A native of hedges, thickets, &c. Flowering time the wet season.†

Root perennial, tuberous.—Stems and branches perennial, young shoots round, and smooth.—Leaves alternate, petioled; palmate, from three to six inches each way; lobes generally five, divided little more than half way down, broad-lanceolate, entire, smooth.—Peduncles axillary, erect, as long as the petioles, sub-umbel-bearing.—Flowers numerous, large, of a beautiful dark reddish purple.—Capsules four-celled.—Seeds woolly, all round.

Obs. Cattle eat it. The root is cathartic, and as such used by the natives where it grows.

24. *C. pedatus*, R.

Perennial, twining, smooth. Leaves pedate-triternate, leaflets lanceolate, entire. Stipules filiform-pedate. Peduncles one-flowered; and with the calyx warted.

Native place uncertain, as it has accidentally sprung up in the Botanic Garden amongst plants received from friends in the vicinity of Calcutta. The flowers appear in profusion during the

\* *Ipomoea*, Brown Prodr. i. 286.—Syst. Veg. iv. 202.—N. W.

† I have specimens collected at Penang by Mr. Jack.—N. W.

cool season; they are pretty large, of a bright sulphur colour and the stigma is of two round lobes.

*Addition by N. W.*

This plant is common about Katunanda and has been sent from thence to this Garden in 1818, by the Hon. E. Gardner, where it is a very slender, extensive climber, which, however, according to my observation is annual, blossoming and ripening its seeds in the hot season. I have also plants raised from seeds which were kindly communicated by Mr. Charles Fraser, Government Gardener at Sydney, from the interior of New Holland; they have not as yet blossomed, but they appear to be precisely the same species. *Stem* very slender, branched, rough with numerous small tubercles, especially its lower part.—*Leaves* rather remote, smooth, somewhat fleshy, opaque, very pale underneath, of an ovate-cordate outline, measuring from two to four inches in breadth, flat, ternate, each leaflet again three-partite, the intermediate larger, the lateral ones having their outer divisions or lobes shorter than the rest and connate at the base, giving the leaf a pedate appearance. The *lobes* are entire, or slightly repand, lanceolate, attenuate-acuminate, tapering downwards, and decurrent on the short partial petioles.—*Petioles* deeply furrowed, scabrous, equalling their leaves in length.—*Stipules* consist of nothing else but the young, very small, sessile leaves, which have precisely the shape of the full grown ones, (as is the case in *C. copticus*).—*Peduncles* axillary, solitary, erect, jointed and bi-bracteate at the middle, club shaped, fleshy, scabrous, one-, rarely three-flowered.—*Flowers* very beautiful, of a yellow colour, purple within, of the size and shape of the following species. *Calyx* of five oblong, thick and fleshy, acute, shining, pretty smooth leaves, about half the length of the tube.—*Corolla* infundibuliform, with a cylindric tube much contracted at its base; limb flat, obscurely and acutely five-lobed, minutely crenulate.—*Stamens* smooth, reaching

to the middle of the tube. *Stigma* of two distinct globular lobes.—*Capsule* naked and smooth, thin, ovate, acute, four-valved, supported by the withered, spreading calyx; as large as a marrow-fat pea.—*Seeds* from two to four, densely covered on all sides with a soft bright orange-coloured villosity.—N. W.

25. *C. digitatus*, R.

Perennial, twining, spinulous. *Leaves* digitate. *Peduncles* from three to four-flowered. *Corols* almost funnel-shaped. *Stigmas* of two round lobes. *Seeds* woolly on the convex side.

A native of hedges, &c. Flowering time the cold season.

*Stems* and *branches* twining, perennial, round, with here and there a few small inoffensive prickles.—*Leaves* alternate, petioled, digitate. *Leaflets* generally five, broad lanceolate, entire, smooth, the inferior ones smallest.—*Petioles* channelled, armed as the branches, as long as the leaflets.—*Peduncles* axillary, about as long as the petioles, from three to four-flowered.—*Flowers* pretty large, between campanulate, and funnel-formed, a pale bluish purple. *Stigma* two-lobed.—*Seeds* woolly on their outer angles.

*Obs.* This is one of the most beautiful *Convolvuli* in India.\*

26. *C. hirsutus*, R.†

Annual, twining, extremely hirsute. *Leaves* digitate; *leaflets* five, sessile, broad-lanceolate, entire. *Peduncles* from one to three-flowered. *Calyx* very hairy, entirely hiding, until ripe, the cordate, smooth, four-celled capsule.

A native of the interior parts of Hindoosthan; flowering time the close of the rains, and cold season.

*Stem* and *branches* annual, twining, very hirsute; hairs somewhat

\* It comes very near to *C. tuberculatus*, Desrouss. in Lam. Encycl. Bot. iii. 545; *Ipomoea*, Syst. Veg. iv. 208.—N. W.

† This must not be confounded with *C. hirsutus* of Marschall & Biberstein.—Syst. Veg. iv. p. 266. et 790.—N. W.

bristly, issuing from little brown glands; general extent of the plant from six to twelve feet.—*Leaves* petioled, digitate. *Leaflets* five, sessile, lanceolar, acute, entire, hairy, about three inches long by one broad.—*Petioles* round, as long as the leaflets, hirsute.—*Peduncles* axillary, sometimes as long as the petioles; hirsute, bearing from one to three, rarely more, middle-sized, pure white flowers, on long hirsute, proper pedicels.—*Bractes* at the base of the pedicels only, sub-lanceolate, recurved, hairy.—*Leaflets* of the *calyx* oblong, permanent; the exterior three large, and extremely hirsute.—*Corol* campanulate, white; *tube* as long as the calyx.—*Stamens* smooth.—*Stigma* of two round lobes.—*Capsule* broad-cordate; *valves* thin, and smooth on both sides.—*Seeds* three or four, smooth.

27. *C. heptaphyllus*, R.

Perennial, twining, smooth. *Leaves* digitate; *leaflets* seven, lanceolar, entire. *Peduncles* filiform, spiral, pendulous, one-, rarely three-flowered.

Of what part of India this is a native I cannot certainly say. It has appeared in one of the nurseries in the Botanic Garden at Calcutta. The seed was most likely received accidentally with some other sorts. Here it flowers during the latter part of the rains, and cold season.

*Stems* and *branches* twining, perennial, long, slender, round and smooth.—*Leaves* petioled, digitate; *leaflets* generally seven, sessile, lanceolar, entire, smooth; from one to two inches long.—*Petioles* slightly channelled, length of the leaflets.—*Peduncles* axillary, solitary, very slender (filiform) twisted, pendulous, longer than the petioles, generally one-flowered, rarely two or three, though three seems the natural number, and the two lateral ones for the most part, prove abortive.—*Bractes* few, and minute.—*Calyx*; *leaflets* ovate, rugose on the outsides.—*Corol* small, pale pink, with the bottom of the bell deeper coloured.—*Stigma* of two round lobes.

*Obs.* A beautiful, delicate, though extensive plant, and uncom-

mainly interesting on account of its slender, pendulous, spiral peduncles, with its pretty, small, pink flowers, standing erect on its thickened, curved apex.

*Sect. 3d. Prostrate, or creeping; not twining.*

28. *C. reniformis*, R.

Perennial, very ramous, and creeping close on the ground. *Leaves* reniform, emarginate, long-petioled. *Peduncles* many-flowered. *Inner* three leaflets of the calyx two-lobed, and ciliate. *Lobes* of the corol bifid.

A native of Bengal. Flowering time the cool season. Burman's figure of *Evolvulus emarginatus*, *flora indica*, 77. t. 30. f. i, is very much like this; if the flowers were more numerous, and their petioles longer, I should consider them the same; they ought to be compared, when an opportunity offers.

*Stems* and *branches* numerous, always creeping flat on the ground, and striking innumerable roots from the joints, smooth, and slender as a pack-thread.—*Leaves* long-petioled, reniform, emarginate, and often slightly scallop-toothed, smooth; size very various; often of a dark ferruginous colour.—*Petioles* longer than the leaves, smooth.—*Peduncles* axillary, much shorter than the petioles, many-flowered.—*Flowers* sub-sessile, very small, bright yellow, opening late in the forenoon, and shutting early in the evening.—*Calyx*, the two exterior leaflets smaller, oblong, and pointed; the inner three broad, wedge-shaped, with a ciliate, two-lobed apex.—*Corol* with its five lobes deeply divided.—*Filaments* smooth.—*Stigma* two-lobed; lobes roundish.—*Capsule* round, size of a small pea, rather longer than the calyx, tomentose, two-celled.—*Seeds* light brown, minutely dotted.

*Obs.* In some soils it is found entirely of a dark-purple or ferruginous colour.

29. *C. flagelliformis*, R.\*

Perennial, creeping. *Leaves* reniform, cuspidate, smooth, with two glands at the base. *Peduncles* from three to five-flowered. *Calyx* transversely rugose. *Stigma* transversely oval, somewhat two-lobed.

Bel-Adamboe, *Rheed. Mal.* xi. p. 119. t. 58. may be this plant though in some respects they will be found to differ a little.

*Ipomoea repens*, *Lamarck illust.* i. 467.

A native of the Mysore country, from thence the seeds were sent by Dr. B. Heyne to the Botanic Garden, where the plants thrive luxuriantly, and are in blossom most part of the year.

*Stem* and *branches* creeping, perennial, long, simple, slender, and smooth.—*Leaves* reniform, or cordate-reniform, with a small terminal bristle for a point, smooth on both sides, and, as in *C. brasiliensis*, having two glands on the underside of the base; breadth from two to three inches, and the length considerably less.—*Petioles* as long as the leaves, channelled, swelled at the insertion, and there marked with some glandular knobs.—*Peduncles* axillary, solitary, larger than the petioles, round, smooth, bearing from three to six, large, pure white flowers.—*Leaflets* of the *calyx* ovate, fleshy; outside transversely rugose.—*Stigma* of one, transversely oval, large lobe.—*Capsule* with generally four, light brown, smooth seeds.

30. *C. repens*, Willd. *Sp. Pl.* i. 874.†

Annual, creeping, or floating, piped, smooth. *Leaves* oblong-cordate, posterior lobes angular. *Peduncles* shorter than the petioles, from three to six-flowered. *Corol* sub-infundibuliform.

Ballel, *Rheed. Mal.* xi. p. 107. t. 52.

*Olus-vagum*, *Rumph. Amb.* v. 419. t. 155. f. 1.

\* *Ipomoea Beladamboe*, *Syst. Veg.* iv. 233.—N. W.

† *Ipomoea*, *Syst. Veg.* l. c. 241. No doubt Loureiro's *C. reptans*.—N. W.

*C. reptans*, Willd. *Sp. Pl.* i. 875, is probably this plant, or a variety of it.

*Sung.* कलुम्बी, Kulumbee.

*Beng.* Kulmi-shak.

*Teling.* Tootie-kura.

A native of standing sweet water, or places where water lately stood, very common.

*Stems* creeping, or floating on the water, annual, or biennial, round, piped, jointed, smooth, many fathoms long.—*Leaves* alternate, long-petioled, oblong-cordate, pointed, entire, smooth, from four to six inches long.—*Peduncles* axillary, erect, round, smooth, from three to six-flowered.—*Flowers* large, beautiful rose colour; lobes triangular. *Tube* of the corol between bell and funnel form. *Base* of the filaments woolly.—*Stigma* two-headed.

*Obs.* The tender tops, and leaves are eaten in stews by all ranks of the natives and much esteemed.

31. *C. Batatas*, Willd. *Sp. Pl.* i. 853.\*

*Root* tuberous. *Stems* creeping, rarely twining. *Leaves* cordate, angle-lobed. *Peduncle* many-flowered. *Stigma* of the calyx oblong, smooth, acute.

*Sung.* रक्तपिण्डालु, Ruktupindaloo, रक्तालु, Ruktaloo, रक्तपिण्डक, Ruktupinduka, लोहित, Lohita, रक्तकन्द, Rukta-kunda, लोहितालु, Lohitaloo.

*Beng.* Lal-shukur-kunda-aloo, the red variety; and Suffet-shukur-kunda-aloo, the white.

*Kappa-kelengu*, Rheed. *Mal.* vii. 95. t. 50.

The red sort is in very general cultivation all over the warmer parts of Asia and very deservedly esteemed one of their most palatable and nutritious roots. I suspect *C. edulis*, Thunb. japan. 84, is the same or a variety.

\* *Ipomoea*, Syst. Veg. iv. 218.—N. W.



32. *C. cespitosus*, R.

Annual, or, biennial, creeping. *Leaves* linear-lanceolate, smooth. *Peduncles* longer than the petioles, from one- to four-flowered. *Calyx* smooth. *Capsules* one-celled, four-seeded.

A native of the dry lands of Dinagapore and Rungpore, from thence the seeds were sent, by Dr. Carey, to the Botanic Garden at Calcutta, where they blossom during the cold season.\*

*Root* generally annual, though sometimes biennial.—*Stem*; I cannot say there is any thing like one, but numerous, slender, round, cespitose, somewhat villous, and, in some parts, even hairy branches, spread close on the earth, and strike root; length of the larger branches from one to three feet.—*Leaves* petioled, linear-lanceolate, smooth, entire, from two to three inches long, and less than half an inch broad.—*Petioles* clothed with long, soft, brown hairs.—*Peduncle* axillary, longer than the petioles, hairy near the base, bearing from one to four, small, very pale-yellow flowers, but when one, or two, these are accompanied with the rudiment of one or two more, and some small, cordate, smooth bractes.—*Calyx*; leaflets oval, equal, smooth, concave, with callous, smooth, dark green margins.—*Stigma* of two round lobes.—*Capsules* globular, smooth, size of a pea, one-celled, four-seeded.—*Seed* smooth, deep brown.

33. *C. (Ipom?) Rheedii*, Wall.

*Stems* perennial? creeping, together with the leaves thinly beset with reflexed hairs; *leaves* remote, short-petioled, lanceolate-oblong; the lowermost ovate-oblong; retuse with a small point; *peduncles* axillary, nearly as long as the leaves, from one to three-flowered, the exterior leaves of the *calyx* very large, ovate-cordate, scariosa, concealing the interior linear-lanceolate ones.

*Ben-tiru-tali*, Rheed. *Mal.* ii. 111. t. 54.

\* I have had specimens of this as also of *C. blandus* (see p. 50), from Penang, where they had been gathered by my friend Mr. Jack.—N. W.

A native of Silhet and Nepala, blossoming in November and December.

*Stems* slender, divided into a few branches, prostrate on the ground, striking roots as they lengthen; their upper ends seem to have a tendency to climb.—*Leaves* from two to four inches long, varying considerably in figure, from linear-oblong to cuneate, mostly acute at the base with a very few hairs.—*Petiol* about half an inch long.—*Peduncles* hairy, round, above the middle with two opposite linear very small bractes; mostly one-flowered, sometimes divided at the apex into two or three generally barren, short pedicels, each with a pair of minute bractes at the middle.—*Calyx* scariose, reticulated, consisting of five very unequal leaves: the two outermost opposite, nearly equal, ovate, more than half an inch long, their cordate base adnate, unequal, with somewhat recurved lobes; the third between these, nearly equalling them in length, but much narrower, dimidiate-cordate, sub-falcate; the two innermost small, alternating with the outer leaves, lanceolate, villous.—*Corolla* white, campanulate, pubescent, with villous plicatures, obscurely five-lobed, scarcely twice the length of the calyx; *tube* very short.—*Stamina* hairy, inserted within the tube, decurrent, short; *anthers* sub-cordate.—*Ovarium* 2-locular, 4-sporous.—*Style* as long as the stamina; *stigma* fleshy, two-lobed.—*Capsule* about half the size of the permanent calyx, 4-valved; 4-seeded. *Seeds* oval, triangular, smooth.

*Obs.* My plant certainly is very like *C. unyflorus*, Burm. Ind. 47, t. 21. f. 2. which appears to be a species of *Calystegia* as has been remarked by the editors of Syst. Veg. iv. 248. (under *Ipomoea*). Independently of its wanting the large calycine bractes, the leaves are broader than those figured by Burman.—N, W.

### 34. *C. stipulaceus*, R.

Creeping, smooth, with apices twining. *Leaves* cordate-sagittate, with lobes repand. *Stipules* recurved. *Peduncles* many-flowered. *Calyx* smooth. *Lobes* of the corol obcordate. *Seed* woolly.

A native of Chittagong, sent from thence by Mr. W. Roxburgh to the Botanic Garden at Calcutta, where it flowers about the beginning of the hot season.

*Root* perennial.—*Stem* and *branches* creeping, round, smooth, extremities twining; length from one to two fathoms, or even more. *Leaves* petioled, cordate-sagittate, with posterior lobes (barbs) often repand, smooth on both sides, point rather obtuse, with a minute bristle; length from two to three inches.—*Petioles* channelled, from one to two inches long.—*Stipules* two, stout, inoffensive, recurved, acute, at the base of the petiole.—*Peduncles* axillary, solitary, about as long as the petioles, round, smooth, somewhat clavate, bearing from three to six or even more, large, pure white flowers.—*Pedicels* clavate, shorter than the peduncles, round, smooth.—*Calyx*; leaflets ovate, equal, concave, smooth, and somewhat transparent.—*Corol*, lobes of the border large, obcordate.—*Nectary* a pentagonal cup surrounding the base of the germ.—*Style* much longer than the stamens. *Stigma* of two round lobes.—*Capsule* ovate, smooth.—*Seed* covered with much soft, deep olive-coloured wool.

### 35. *C. pentagonous*, R.

Perennial, angular, creeping. *Leaves* cordate-sagittate, with the posterior lobes rounded, but somewhat angular. *Peduncles* rigid, umbelliferous; *calyx* smooth. *Lobes* of the corol circular. *Seeds* hairy.

A native of the Moluccas; and from thence introduced into the Botanic Garden at Calcutta in 1800; where it blossoms during the cold and hot seasons.

*Root* perennial.—*Stems* and *branches* creeping, pentangular; young parts villous, and sometimes twining, though not readily; length of the whole plant from two to three fathoms.—*Leaves* petioled, the lower ones broad-cordate-sagittate; the superior ones narrow-sagittate; in all the posterior lobes are large, and rounded, though frequently a little angular; margins generally entire; both sides

very villous; *length* from one to four inches.—*Petioles* scarcely half the length of the leaves, channelled, villous, at the base swelled on each side into two glandular, stipulary knobs.—*Peduncles* axillary, solitary, erect, rigid, clavate, villous, about as long as the petioles, supporting a trichotomous, corymbiform umbel, of many, pretty large, pure white, inodorous flowers.—*Pedicels* shorter than the peduncles, but like them clavate, and villous.—*Bractes* many, caducous, and of various sizes.—*Calyx*; *leaflets* oval, concave, slightly villous, much shorter than the tube of the corol.—*Corol* perfectly campanulate. *Border* divided into five semi-circular lobes.—*Stamina* hid in the tube.—*Style* about as long as the stamens, of two round lobes.—*Seed* dark-brownish black, and covered with much soft hair, of the same colour.

36. *C. bilobatus*, R.\*

Perennial, creeping. *Leaves* two-lobed, smooth. *Peduncles* from three- to six-flowered. *Lobes* of the stigma round. *Seed* woolly.

*Convolvulus marinus*, *Rumph. Amb.* v. 433. t. 159. f. 1.

A native of the Moluccas, from whence the roots were brought to the Botanic Garden at Calcutta, amongst the earth in which some spice plants came. They blossom during the hot season.

*Stems* and *branches* creeping, perennial, striking root at the joints chiefly; *young shoots* smooth, polished, pale green; length from one to three fathoms.—*Leaves*, *petioles* erect, two-lobed, or of a deeply emarginate, round, obcordate shape, margins entire, and very smooth on both sides, about three inches long, by two and a half broad.—*Petioles* round, slightly channelled, smooth, with two very conspicuous reddish glands at the apex.—*Peduncles* axillary, erect, slender, and longer than the petioles; bearing from one to seven, or even nine, large, purple flowers on their proper, clavate,

\* *Ipomoea maritima*, Brown. Prodr. i. 486.—Syst. Veg. iv. 249.—*Conv. maritimus*, Desrousseaux, in Lam. Encycl. Bot. iii. p. 550.—N. W.

striated, pedicels.—*Calyx*; *leaflets* ovate, somewhat three-ribbed, and transversely rugose.—*Nectary*, a glandular ring round the base of the germ.—*Filaments* enlarged, woolly at the base.—*Stigma* of two round lobes.—*Capsules* vertically compressed, smooth, lined with a tough pellicle.—*Seed* clothed with much, soft, short, dark brown hair.

*Obs.* A variety, if not a distinct species has been reared in this Garden, from seed received from China. It flowers in April and May; the peduncles one-flowered, the leaflets of the calyx scarcely rugose, with subulate points; when wounded milky. In size, colour of the flowers, leaves, &c. they are same.

37. *C. Pes-capra*, Willd. *Sp. Pl.* i. 876.\*

Perennial, creeping to a great extent. *Leaves* long-petioled, two-lobed, smooth, at the base two glands. *Peduncles* axillary, solitary, one or two-flowered.

*Beng.* Chhagul-khooree.

*Hind.* Dopati-luta.

Schovanna-Adamboe, *Rheed. Mal.* xi. 117. *t.* 57.

A native of the sandy shores of India; where it blossoms and ripens its seed most part of the year.

*Stems* perennial, columnar, and smooth, never twining, but creeping to a very great extent over the sandy shores of the sea coasts, where, the plant is chiefly found.—*Leaves* long-petioled, deeply two-lobed, smooth, with two large coloured glands at the base.—*Peduncles* axillary, solitary, length of the leaves, generally one or two-flowered.—*Flowers* large, red-purple.—*Calyx*; *leaflets* oblong, acute, transversely rugose on the out side toward the base.—*Stigma* of two round lobes.—*Seeds* densely clothed with a dark brown, plush-like pubescence.

\* *I. maritima*, Brown et Syst. Veg. l. cit.—*C. maritimus*  $\beta$ , Desrousseaux, l. cit.—N. W.

*Obs.* This plant is very useful where it naturally grows, helping to bind the loose sand, and in time render it sufficiently stable to bear grass. Goats, horses, and rabbits eat it.

### LETTSOMIA, R.

*Calyx* five-leaved; *corol* from campanulate to infundibuliform. *Germ* two-celled. *Stigma* two-lobed. *Berry* dry or succulent, two-celled, *cells* one or two-seeded. *Embryo* erect, curved; cotyledons corrugated.

In honour of John Coakley Lettsom, M. D. F. S. A. author of numerous valuable works which more than prove him fully entitled to this mark of respect.

The genus is composed of very powerful, extensive, twining, perennial, lactescent plants; with simple leaves and axillary inflorescence.

#### *Sect. 1st. Corol campanulate.*

##### 1. *L. splendens*, R.

Perennial, twining. *Leaves* cordate-oblong, parallel, veined, sericeous underneath. *Corymbs* axillary. *Berry* highly coloured and embraced by the permanent crimson *calyx*.

A most beautiful plant, far exceeding every other species I have yet met with; a native of Chittagong, where it blossoms and ripens its seeds at various times of the year.

#### *Addition by N. W.*

The stately species, climbs over trees of considerable size, covering them, especially during the rainy season with its elegant

foliage, beautifully contrasting with the profuse, pale, pink-coloured flowers.—The *stem* of the largest individual in the Botanic Garden measures upwards of sixteen inches in circumference, and is covered with uneven ash-coloured bark. *Branches* perfectly round, very long and slender, together with the petiols and peduncles covered with soft, white, adpressed hairs.—*Leaves* ovate, most entire, cuspidate-acuminate, slightly cordate at the base, from six to eight inches long, perfectly smooth, opaque, and of a deep green colour above; densely covered underneath with copious, adpressed, silky hairs, which give the surface a most splendid appearance, rib very prominent, sending forth numerous approximate, sub-transversal, entire nerves; veins few. The young leaves are somewhat ovate-oblong.—*Petiol* thick, round, obscurely furrowed above, about one-third the length of its leaf; its upper end slightly compressed, with an oval dark-coloured glandular depression on each side, immediately above the base of the leaf.—*Flowers* large, in axillary, and terminal, long-peduncled, once or twice trichotomous, hoary corymbs.—*Peduncles* round, one-third shorter than the leaves, erect; *pedicels* short, with a pair of ovate obtuse deciduous bractes at the middle.—*Calyx* ovate, hoary, consisting of five oval obtuse leaves.—*Corol* campanulate, about two inches long, hairy on the outside, the plicatures as well as the inner surface smooth; *limb* short, with five retuse lobes.—*Stamens* short, unequal, their bases villous.—*Stigma* in the mouth of the corol two-lobed, round.—*Berry* of the size of a large pea, round, of a scarlet colour, pointed with the remaining base of the style, perfectly smooth, smaller than the leathery concave spreading round leaves of the permanent calyx which is hoary without and crimson, smooth within.—*Integument* thin, dry.—*Seeds* four, tringular, smooth.—N. W.

2: *L. aggregata*, R.

Perennial, twining. *Leaves* cordate, woolly underneath. *Pedunc-*

*les* axillary, supporting four sessile heads of involucred flowers. *Stamina*, and *style* much longer than the corol. *Berry* four-seeded.

*Teling.* Yerra-kutha.

A native of various parts of the coast of Coromandel. Flowering time the cool season; *seed* ripe in March and April.

*Stems* ligneous, twining to a great extent; young shoots round, clothed with soft, white pubescence; and discharging a milky juice when wounded.—*Leaves* petioled, round-cordate, entire, smooth above, woolly underneath; from three to six inches long, and from two to five broad.—*Peduncles* axillary, generally solitary, longer than the petioles, round, woolly; each supporting an umbellet of four, cruciform; sessile heads of small, pink-coloured, sessile flowers with a single sessile one in the centre; surrounded with several, roundish woolly bractes, (involucre,) with incurved margins.—*Calyx*, *leaflets* unequal, cuneiform, woolly on the outside.—*Corol* campanulate. *Border* deeply cut into five, emarginate lobes.—*Stamina* much longer than the corol, and of the same colour.—*Germ* surrounded with a particularly large, yellow, nectarial ring. *Style* as long as the stamina. *Stigma* of two, large, round lobes.—*Berry* round, covered with a soft, tough, smooth, fleshy, bright-red envelope, about the size of a marrow-fat pea, two-celled, with two seeds in each, when all come to maturity. The remaining calyx is now enlarged, and clothed on the out side with sericeous down, while the smooth bright red, inner surface thereof adds much to the beauty of this elegant species when in fruit.—*Seeds* smooth, pale ash-coloured. *Embryo* as in the genus.\*

\* I have had this distinct species from my highly respected friend the Rev. Dr. J. Rottler under the name of *Conv. orizensis*, Klein et Rottl. who found the plant in Orissa, Ceylon, and Mysore. The following is the specific character attached to the specimens "Canle non volubili cinereo-tomentoso; foliis cordato-ovatis, obtusis cum acumine, nervosis, subtus cinereo-tomentosis supra viridibus, floribus paniculatis."—N. W.



3. *L. nervosa*, R.\*

Shrubby, twining to a great extent. *Leaves* broad-cordate, sericeous underneath, veins parallel. *Peduncles* longer than the petioles, umbelliferous. *Stigma* round, of two lobes. *Capsules* one-valved, one-celled.

*Convolvulus nervosus*. *Burm. Ind.* 48. t. 20. f. 1.

Samudra-stjogam, *Rheed. Mal.* xi. 125. tab. 61.

*Sung.* वृद्धदारक, *Vriddhudaruka*; वृद्धदरुक, *Vriddhudarooka*, धक्षगन्धा, *Rikshugundha*; हगलान्त्री, *Chhugulantree*; हगलान्त्रिका, *Chhugulantrika*; हगलान्त्री, *Chhugulanghree*; हगला, *Chhugula*; अन्त्री, *Untree*; आवेगी, *Avegee*; जुग, *Joonga*; जंगा, *Joonga*; जुंगक, *Joonguka*; दीर्घवालुक, *Deerghuvalooka*; वृद्धकाटरजुंगी, *Vriddhukoturajuongee*; अजान्त्री, *Ujantree*.

*Beng.* Bis-taruka.

*Teling.* Kokayti.

A native of forests, hedges, &c. it is one of the largest species of the *Convolvulacea* I know. Flowering time the wet and cold seasons.

*Stems* twining, woody, of a very great length, running over the highest trees; young parts covered with white silky down.—*Leaves* petioled, broad-cordate, entire; many large, distinct, opposite nerves running parallel; the upper side pretty smooth, the under side covered with much soft, white, silky hair; from four to twelve inches each way.—*Petioles* shorter than the leaves, tapering, round; at the apex on each side is a large, flat, scabrous, dark coloured gland.—*Peduncles* axillary, like the petioles, but longer, bearing an erect umbell, of many flowers.—*Flowers* large, of a deep rose-colour.—*Bractes* many, large, oval, white, waved, pointed, caducous. *Stigma* two, globular.—*Berry* globular, smooth, entire, not opening in a regular manner, but crumbling to pieces.

\* *C. speciosus*, Smith, Jc. pict. 17. (Syst. Veg. l. cit. 239, sub *Ipomoea*) notwithstanding (as Dr. Roxburgh remarks in a manuscript note) the pointed lobes of the corolla and stigma as represented in the figure.—N. W.

*Obs.* Seeds received from England, sent to me by the late Honourable Charles Greville, under the name *Convolvulus speciosus*, produced this identical plant. *Stigma*, &c. &c. perfectly the same as in the original Bengal plant.

4. *L. argentea*, R.

Perennial, twining. *Leaves* cordate, parallel-veined, sericeous underneath. *Peduncles*, as long as the petioles, leafy; *bractes* lanceolate, sericeous.

Found in forests about Calcutta. I never saw it on the coast of Coromandel.

*Beng.* Sumoodra-shoka, chhota Bistaruka.

*Stems* twining, perennial.—*Leaves* petioled, broad-cordate, entire, with many parallel veins, as in *C. nervosa*; the upper side pale green, with depressed hairs, the under side covered with much bright, silver-coloured, silky down; about four inches long each way.—*Petioles* erect, round, hairy, length of the leaves; at the apex on each side is a green gland, as in *C. nervosus*.—*Peduncles* axillary, erect, round, hairy, umbel-bearing.—*Bractes* lanceolate, silky.—*Flowers* many, large, of a beautiful rich pink-colour.—*Nectary*, a fleshy ring round the base of the germ.—*Stamens*, base of the filaments woolly.—*Berry* soft, and pulpy, four-seeded.

*Obs.* The following marks distinguish this species from *nervosa*, to which it is nearly allied:

1st. The leaf-bearing umbel.

2d. The bractes. In this species they are lanceolate and not waved, in that oval and much waved.

3d. The flowers of this species are larger, and the leaves much smaller than in that.

4th. Here the veins are few, and alternate, there many, large and opposite.

5th. This produces a soft Berry, that a perfectly dry capsule.

5. *L. setosa*, R.\*

Perennial, twining, tender parts armed with adpressed bristles. *Leaves* round-cordate, acuminate, parallel-veined, scaly underneath. *Peduncles* paniced. *Corols*, exactly campanulate, with a small, sub-entire border. *Berry* hid in the large, fleshy calyx.

A native of the northern Circars. Flowering time the cool dry months of December and January.

*Stems* ligneous, twining. *Branches* numerous; young shoots clothed with stiff, short, silvery, adpressed bristles.—*Leaves* petioled, round-cordate, entire, acuminate; veins parallel, elevated, and simple; the upper surface smooth, deep green, the under one whitish, with numerous minute, pellucid scales, and a few remote, adpressed, stiff hairs; from two to eight inches long, and nearly the same in breadth.—*Petioles* considerably shorter than the leaves, bristly.—*Panicles* axillary, solitary, long-peduncled, corymbiform. *Peduncles* and *ramifications* whitish, with numerous, adpressed, whitish bristles.—*Flowers* numerous, pretty large, sessile on the ramifications of the panicle, pink-coloured.—*Bractes* several round the base of each calyx, like a calycle, oval, concave, rigid, bristly.—*Calyx*; leaflets oval, obtuse, nearly equal, permanent; the outside bristly.—*Tube* of the corol exactly campanulate, the outside somewhat bristly. *Border* almost entire, spreading.—*Germ*, the lower half invested in a large yellow ring. *Style* about as long as the stamina. *Stigma* of two round lobes.—*Berry* ovate, smooth, shining red, hid within the leaflets of the permanent calyx.

6. *L. strigosa*, R.†

Perennial, twining, every part covered with harsh brown hairs. *Leaves* cordate, entire, with many parallel nerves. *Peduncles* elongated. *Flowers* aggregate.

\* *L. strigosa*, Roth. in Syst. Veg. l. cit. 242?—N. W.

† *Conv. capitatus*, Vahl. Symb. iii. 28, (Ipom. Syst. Veg. l. cit. 238) may perhaps be this species.—N. W.

A native of the eastern part of Bengal, and from thence sent to the Botanic Garden at Calcutta, by Dr. Buchanan. Blossoms about the close of the rains.

*Stem* woody, twining up, and over high trees. *Bark* rough, *young shoots* very hairy.—*Leaves* alternate, petioled, cordate, entire, nerves many, and parallel, very hairy on both sides; from four to six inches long, and three or four broad.—*Peduncles* axillary, round, hairy, longer than the petioles, each supporting a few large, sessile, rose-coloured, campanulate flowers, surrounded with many broad-lanceolate, hairy bractes.—*Stigma* of two, large, globular lobes.

7. *L. cuneata*, R.

Perennial, twining. *Leaves* cuneate-emarginate; villous underneath. *Peduncles* three-flowered, much shorter than the leaves.

*Convolvulus cuneatus*. Willd. Spec. i. 873.

Some plants of this uncommonly elegant species, were brought from the Mysore country, by general Martin in 1792. He gave one of them to the Botanic Garden at Calcutta, which has been multiplied by layers, and blossoms about the close of the rains in September, and October.

*Stems* woody, twining, of very considerable extent. *Bark* smooth dark grey. *Young shoots* covered with short depressed hairs.—*Leaves* alternate, short-petioled, cuneate, emarginate, entire, smooth above, a little hairy underneath; general length about two inches.—*Peduncles* axillary, solitary, three-flowered, round, villous, about three quarters of an inch long.—*Pedicels* shorter than the peduncles, always consisting of an opposite incurved pair, with a solitary shorter one in the centre.—*Bractes* linear.—*Calyx*, *leaflets* ovate, a little villous.—*Corol* large, of a beautiful deep bright purple colour. *Tube* ample; the five-lobes of the border emarginate, which makes the whole appear ten-lobed. *Nectary*, a fleshy ring round the base of the germ.—*Filaments* broad, and hairy, at the base.—*Stigma* of two round heads.—*Berry* oblong, dry, one-celled.—*Seeds* from one to four, immersed in a little dry farinaceous matter.

*Obs.* This, when in blossom, is one of the most beautiful of the whole order; the large, very bright, deep purple flowers make it particularly conspicuous amongst its own deep green leaves, and this is much augmented by making it run over any other stout plant with dense deep green foliage.

*Note by N. W.*

I cannot help thinking that Dr. Sims's *Ipomoea atrosanguinea*, Bot. Mag. xlvii. 2071, is this identical plant, notwithstanding its erect stem and one-flowered peduncles. The figure certainly indicates a tendency to become climbing.—It is to be regretted that this charming shrub very rarely produces ripe seeds; at least I have been unable to obtain a single one either in the botanic garden or in any other; it is even difficult to propagate it by layers.

8. *L. cymosa*, R.

Perennial, twining. *Leaves* round, reniform-cordate. *Peduncles* larger than the leaves. *Flowers* many, in an involucred, dense cyme. *Berry* globular.

An extensive, stout, perennial, twining plant, a native of the Malabar mountains; from Wynaad the seeds were sent, by Captain Dickenson, to the Botanic Garden at Calcutta, where the plant flowers during the cold season. The seeds ripen four or five months afterwards.

*Stem* and larger *branches* woody, twining, young shoots villous. *Leaves* round, reniform-cordate, villous; from three to four inches long and from three to five broad.—*Peduncles* axillary, solitary, generally longer than the leaves, each supporting a yellowish, dense cyme of many sub-sessile, large, pale pink flowers; embraced by one or more unequal small leaves, the largest of which are shaped like the other leaves, and peduncled; the smaller ones nearly round, and sessile. *Calyx*, the exterior leaflets nearly round; the inner

ones ovate-oblong; all are more or less recurved, and villous.—*Corol* sub-infundibuliform, the outside villous. *Style* much longer than the stamens. *Stigma* of two round, bright purple lobes.—*Berry* smooth, yellow, soft, pulpy, round, size of a small cherry; with from one to four, smooth, white seeds.—*Seeds* and *embryo* as in other *convolvulaceæ*, viz. a descending radicle with the lobes irregularly folded, and invested, while fresh, in something like a thin perisperm.

9. *L. pomacea*, R.

Perennial, twining. *Leaves* round-cordate, emarginate: *Peduncles* dichotomous, from three to five, or seven-flowered. *Bractes* cuneate. *Berry* succulent, four-seeded.

*Ipomoea zeylanica*. *Gart. carp.* ii. 482. t. 178.

A native of Mysore, from thence the seeds were sent by Dr. Buchanan to the Botanic Garden, where the plants thrive well, and blossom during the hot and rainy seasons; the seeds ripen about eight months afterwards.

*Stems* twining, ligneous, as thick as a man's arm; *young parts* covered with tolerably smooth, ash-coloured bark. *Branches* numerous, twining, very extensive; *young shoots* clothed with short, white depressed hairs.—*Leaves* petioled, round-cordate, with the margin waved, emarginate, both sides clothed with short hair; veins almost simple and parallel; length from two to four inches, the breadth nearly equal to the length.—*Petioles* round, shorter than the leaves, hairy; an obscure green gland on each side of the apex.—*Peduncles* axillary, solitary, longer than the petioles, round, hairy, dichotomous; each division bearing one, two, or three large rose-coloured flowers, with one in the fork.—*Bractes* several, cuneate, hairy.—*Calyx*: *leaflets* oval, obtuse.—*Corol*, tube somewhat gibbous, a little hairy on the outside.—*Stigma* of two round lobes.—*Berry* spherical, smooth, size of a cherry, when ripe yellow, consisting of soft yellow pulp, containing four large roundish, smooth white seeds.

Sect. 2d. *Corol infundibuliform.*

10. *L. bona-nox*, R.

Perennial, twining. *Leaves*, round cordate. *Peduncles* three-flowered, *stigma* of two cylindric lobes. *Berry* dry, ovate-oblong, one-celled, from one to four-seeded.

*Beng.* Kulmi-luta.

Clove-scented creeper, *Asiat. Res.* iv. 257.

Midnapore creeper, its common English name.

*Ipomoea bona-nox*, Gært. carp. ii. 247. t. 134, agrees better with the seed vessel of *convolvulus nervosus*, *Burm.* than of this species.

A native of the forests of Midnapore in Bengal; flowers during the rains. Seed ripe in November, December, and January.

*Stem* stout, in old plants as thick as a man's arm, covered with spongy, cracked, dull ash-coloured bark. *Branches* and *branchlets* twining up and over large trees, to a great extent; tender shoots somewhat hairy.—*Leaves* long-petioled, round, and round-cordate, entire, bristle-pointed, though obtuse, or even emarginate; somewhat villous, particularly underneath, and there, while young, hoary; *length* from three to six inches; *breadth* nearly the same.—*Petioles* of various length, round, villous, with a dark-coloured gland on each side of the apex.—*Peduncles* axillary, solitary, generally shorter than the petioles, three-flowered, though frequently one of the three, or even two of them, are abortive.—*Flowers* short-pedicelled, large, pure white, expanding at sun set, and perfuming the air to a considerable distance with a fragrance resembling that of the finest cloves. In fact it is the Prince of the *Convolvulaceæ*.—*Bractes* sub-lanceolate, three to each of the lateral flowers.—*Calycine* leaflets ovate-cordate, obtuse, a little hairy.—*Corol*; *Tube* cylindric. *Border* ample and nearly entire.—*Filaments* woolly at the base.—*Germ* surrounded with a yellow nectarial ring, ovate, four-celled, with one *ovulum* in each cell, attached to its lower, inner, angle. *Stigma* composed of two distinct, cylindric, glandular lobes.—*Berry* dry, smooth, shin-

ing-brown, ovate-oblong in our cultivated plants ; somewhat pointed, size of a filbert, one-celled.—*Seeds* from one to four ; in our gardens one is by far the most common number ; enveloped in a soft, white, spongy substance, which in drying separates from the inside of the pericarpium and adheres to the seed, which is of an oval shape, and about the size of a small pea. *Integuments* two, besides the exterior spongy lamina ; the *exterior* one hard and tough ; the *interior* one membranaceous, and entering the folds of the *cotyledons*.—*Embryo* as in the other *convolvulaceæ*.

*Obs.* The trivial name *bona-nor* is well applied here on account of the charming appearance, and delightful fragrance of its flowers from the time they first expand, about sun set, until sun rise, when they wither, but I doubt if it is the species to which Linneus gave this name ; I rather think it was that which I now call *Ipomoea grandiflora*, (*Munda valli* of *Van Rheedee*.)

11. *L. uniflora*, R.\*

Perennial, twining, hoary. *Leaves* reniform-cordate, acute.

*Peduncles* one-flowered. *Berry* dry, spherical.

*Ipomoea candicans*, *Rottler. Mss.*

*Teling. Boordi-tiga.*

This species is very common in forests over the southern parts of the Carnatic, and Tanjore country. Flowering time the cold season.

*Stem* twining, woody, running over high trees, &c. *young shoots* hoary.—*Leaves* petioled, broad-cordate, or reniform, entire, with the underside downy, particularly while young ; from one to two inches each way.—*Petioles* the length of the leaves, having two glands laterally at the extremity.—*Peduncles* axillary, solitary, length of the petioles, one-flowered.—*Flowers* large, pure white, opening at sun set, and drooping at sun rise.—*Bractes* two, near the top of the pe-

\* *Convolv. candicans*, herb. Willd. in *Syst. veg.* iv. 302 ; but not the plant so named by Roth, *ibid.* 273, which I think must be Roxburgh's *L. ornata*.—N. W.



duncles.—*Tube* long, slender, cylindric.—*Nectary* a yellow, fleshy ring surrounding the base of the germ.—*Stigma* two-lobed, lobes linear-oblong, erect.—*Berry* spherical, dry, smooth, shining, brown, one-celled.—*Seeds*: from one to four is the natural number, immersed in a brownish farinaceous pulp.

12. *L. ornata*, R.\*

Shrubby, erect, ultimately twining. *Leaves* nearly round, entire with large round lobes, sericeous underneath. *Peduncles* many-flowered. *Stigma* with two lanceolate lobes. *Berry* dry, oblong, beaked, shorter than the calyx.

A native of the interior parts of India; from Cawnpore Colonel Hardwick sent the plants to the Botanic Garden at Calcutta, where they blossom during the rains.

*Stems* sub-herbaceous, flaccid, scarcely ever twining, sometimes sericeous. *Branches* few, and like the stems.—*Leaves* nearly round, posterior lobes rounded; margins entire; apex rather emarginate; smooth above, of a dull livid colour underneath, and somewhat sericeous; general size from three to six inches each way.—*Petioles* round, sericeous, shorter than the leaves, with a greenish gland on each side near the apex as in all the other species of this family.—*Peduncles* axillary, as long as the petioles, and like them bearing from about six to twelve, very large, pure white flowers, nearly resembling those of *Ipomoea grandiflora* and *Lettsonia bona-nor*.—*Bractes* lanceolate.—*Calyx*, leaflets linear-oblong.—*Corol* with a

\* *C. candicans*, Roth. (see the preceding note.) I have found this species in various parts of Nipal, in the thick forest at Hetounra and along the tortuous tract of the Rapti; also in the valley itself at the foot of mount Nag-Urjoon and Shiva-poor. Like all the other productions which that noble country has in common with Hindoot'han, our plant grows to an unusual size, measuring often five or six feet in height and becomes very branchy. It has a tendency to climb, and often twists itself round branches of other shrubs. The whole plant is densely villous, becoming smoother by age.—The capsule as large as a filbert, with a columnar point, of a polished brown colour, like mahogany. It blossoms during the rainy season; its seeds ripen in December—January.—N. W.

cylindric tube, from two to three inches long, border about four inches in diameter.—*Flowers* hairy at the base. *Anthers* within.—*Germ* four-celled, four-seeded. *Stigma* of two linear-oblong lobes.—*Berry* oblong, shorter than the calyx, smooth, pointed, one-celled.—*Seeds* from one to four, (one is most common), enveloped in a little mealy pulp.—*Perisperm* and *embryo* as in the order.

### IPOMOEA.

*Calyx* five-leaved, (or five parted). *Corol* funnel-shaped. *Stigma* two-lobed. *Capsules* two-celled, cells two-seeded.

#### 1. *grandiflora*, R.

Perennial, twining, sometimes murexed. *Leaves* cordate, rarely lobate, acute, smooth. *Peduncles* length of the petioles, three-flowered. *Stigma* of two round lobes. *Capsules* two-celled.

Munda-Valli, *Rheed. Mal.* xi. 103. t. 50.

*Convolvulus grandiflorus*, *Linn. suppl. plant*, 136.

Munda-valli, *Asiat. Res.* iv. 257.

Beng. Doodiya-Kulm.

*Ipomoea bona-nox*, *Jacq. Hort. Schoenb.*

*Convolvulus maximus*, *Sloan. Jam.* 96. f. 1. is most likely this plant for I have reared it in Bengal from seed received from the West Indies with that name. The only difference is that the leaves of the West Indian plant are rather more angular, and like Sloanes figure, than those of the East Indian one.

A large, twining species, common in hedges near Samulkota, and in Bengal, and on the banks of water courses amongst bushes. Flowers during the cold season in the Circars, and in Bengal during the hot and rainy seasons.

*Stem* twining, running to the height of from ten to twenty feet, smooth, except that it is sometimes armed with small inoffensive prickles.—*Leaves* scattered, petioled, cordate, pointed, generally

entire, though sometimes a little lobed, or angular, smooth, about three or four inches long and three broad.—*Petioles* round, smooth, length of the leaves.—*Peduncles* axillary, smooth, clubbed, length of the petioles or more, from two to four-flowered.—*Flowers* remarkably large, the border being from four to six inches in diameter, pure white, delightfully but faintly fragrant, opening at sun set, and drooping at day light. *Tube* very long, cylindric.—*Stigma* double.—*Capsules* ovate, smooth, two-celled, four-valved.—*Seeds* four, viz. two in each cell, smooth, black.

*Obs.* Till I observed Gærtner's figures of the capsule and seeds of *Ipomoea bona-nor* I considered this to be that plant. Dr. König also thought it was *bona-nor* and I think he said Linneus the son had committed a mistake when (in the *Supplementum Plantarum*) he called this plant *Convolvulus grandiflorus*, instead of *Ipomoea grandiflora*.

## 2. *I. salicifolia*, R.

*Leaves* linear-lanceolate, acuminate. *Peduncles* one to three-flowered, length of the petioles.

Found by Dr. Buchanan in the district of Rungpore in Bengal. In the Botanic Garden at Calcutta it is biennial, flowering in the rainy season.

*Stem* and *branches* twining to a moderate extent, round, and smooth.—*Leaves* short-petioled, linear-lanceolate, tapering from the rounded base into a long, slender, acute point, entire, smooth on both sides, from three to eight inches long, and scarcely one broad at the broadest part.—*Peduncles* axillary, solitary, half an inch long, bearing one, two, or three large, pure white flowers.—*Calyx*; *leaflets* five, ovate, smooth.—*Corol* with a cylindric tube of about an inch and a half in length, border flat, obscurely divided.—*Stamina* hid in the tube of the corol.—*Stigma* of two round lobes.—*Capsules* two-celled, with three seeds in each.

3. *I. muricata*, R.

Annual, twining, muricate. *Leaves* cordate. *Peduncles* few-flowered; inside of the tube of the corols hairy.

*Convolvulus muricatus*, Linn. Mant. 44.

I have only met with this in my own garden, it was raised from seeds sent from Persia and proves annual.\*

*Stem* as in *I. grandiflora*, but much more murexed, and not so long, the leaves also the same, but much larger.—*Peduncles* axillary, half the length of the petioles, from two to six-flowered.—*Flowers* large, pale bluish-purple. *Tube* widening a little towards the mouth; inside hairy, by which mark it is instantly distinguished from *I. grandiflora*.

4. *I. multiflora*, R.

*Stems* woody, twining. *Leaves* broad-cordate, downy. *Peduncles* as long as the leaves, umbelliferous.

A common species, native of hedges, forests, &c. Flowering time the cold season.

*Stem* perennial, woody, twinning up, and over trees and bushes.—*Leaves* scattered, petioled, broad cordate, entire, a little bent downwards, bristle-like pointed, both sides a little downy, particularly the under one, from three to four inches each way.—*Petioles* round, downy, from two to three inches long.—*Umbells* three or five-parted, many-flowered.—*Peduncles* round, nearly erect, longer than the leaves.—*Flowers* numerous, very large, rose-coloured; inside of the tube a bright red.—*Leaflets* of the calyx unequal.—*Stigma* two-lobed; lobes globular.

\* It is found in most parts of Hindoost'han. I have met with it in various parts of the country along the Ganges, from Behar and Tirhoot up to Cawnpore; also at Lucknow. I have likewise frequently seen it in the valley of Nepala (1) where it blossoms in the rainy seasons.—N. W.

(1) The name of this Country is written in Sungskrita Dictionaries Nepala, and Nepala with the i sounded long as in time, the final a is not pronounced. On that account it will be hereafter written Nipal, as most agreeing with the pronunciation in the country itself. Ed.

*Obs.* This species while in flower is one of the greatest beauties of our forests. Whether this is what König called *Ipomoea Burmanni* or not I cannot say.

5. *I. sepiaria*, Kön. Mss.

Perennial, twining, hairy. *Leaves* cordate. *Peduncles* many-flowered, and with the pedicels clavate, *capsule* four-celled.

Tiru-tali, *Rheed. Mal.* xi. p. 109. t. 53. is certainly this plant, though quoted for *Convolvulus maximus*. Can they be the same? Probably they are, as Vahl's description agrees tolerably well with my plant.

*Teling.* Metta-tootia.

This is one of the most common species on the Coast, it grows plentifully in every hedge, thicket,\* &c. Flowers during the rainy and cold season.

*Stem* twining, perennial, young shoots round, filiform, hairy.—*Leaves* alternate, petioled, cordate, pointed, somewhat sagittate, or angular behind, otherwise entire; *smooth*, often clouded with brownish spots in the centre; from two to three inches long.—*Peduncles* axillary, as long as the leaves, round, smooth, clubbed, many-flowered.—*Flowers* large, of a beautiful pale rose-colour.—*Stigma* two-lobed; *lobes* globular.—*Capsule* smooth.

6. *I. cærulescens*, R.

Perennial, twining, all the tender parts hairy. *Leaves* round cordate, acute. *Peduncles* erect, length of the petioles, from one to three-flowered. *Stigma* of three round lobes. *Capsules* smooth, three-celled.

Native place uncertain, nor can any Asiatic names be procured for this beautiful, distinct species.

*Stems* perennial, twining to a great extent; *young shoots* round, hairy, and twining; hair reflexed.—*Leaves* round-cordate, long-petioled, posterior lobes large and rounded, apex acute, surface less hairy than the petioles and shoots, size three or four inches each way.—

\* It is equally abundant in Bengal. *Ed.*

*Peduncles* axillary, length of the petioles, hairy, at all times erect, from one to three-flowered.—*Flowers* pretty large; their colour when they first expand early in the morning, is a beautiful lively pale blue, or azure, gradually growing darker.—*Bractes* lanceolate, hairy.—*Calyx* five-cleft; *segments* ensiform, hairy, about half the length of the tube of the corol.—*Corol*; *Tube* widening a little from the base, paler than the undivided border.—*Germ* three-celled. *Stigma* three-lobed; *lobes* round.—*Capsules* smooth, three-celled, with two smooth, black seeds in each.

*Obs.* This, and *I. cærulea* (probably *I. hederacea* of Jacquin,) are exactly the same in the *inflorescence*, *germ*, *stigma* and *capsules*; but they differ specifically. This being perennial, and having the leaves constantly without any tendency to be lobate; whereas that is annual, with three-lobed leaves. I may farther add, that plants raised from seed received from the Honourable Charles Greville, in London, under the name *Convolvulus hederaceus*, differ only in the colour of the flowers from my *I. cærulea*, in which it is blue, and in this, *hederacea*, white.

#### 7. *I. cærulea*, Kön. Mss.\*

Annual, twining, hairy. *Leaves* cordate, three-lobed, downy. *Peduncles* from two to three-flowered, margins of the corol sub-entire. *Stigmas* three-lobed. *Capsules* three-celled.

Beng. Neel-kulmi.

It is common during the rains in most parts of India.

*Stems* and *branches* twining, annual, round, hairy, from six to twelve feet long, as thick as a crow quill.—*Leaves* alternate, petiolated, broad-cordate, three-lobed, downy; from two to four inches long, acute, &c. almost as in *Dillenius's* figures of *Convolvulus Nil.*—*Peduncles* axillary, length of the petioles, round, hairy, from two to three-flowered.—*Bractes* and leaflets of the calyx linear.—*Flowers* large, of a beautiful light, but bright blue.—*Stigma* sub-globular,

\* This, as the author hints above, is undoubtedly *I. hederacea*, Linn. I have found it, though rarely, in the valley of Nipal, blossoming in May.—N. W.

large, glandular, three-lobed.—*Capsule* much shorter than the calyx, smooth, three-celled, with two seeds in each.

I have often reared this species in my garden, on account of the great beauty of its large flowers, and do not find it to vary.

The seeds of this plant are sold in the native apothecary's shops in Calcutta, under the name *Kala dana*, and used as a purgative. I have heard them much praised as an effectual, quick-operating, safe cathartic. The dose is from thirty to forty grains of the seeds in substance, when administered they are gently roasted like coffee, then powdered, and given in any convenient vehicle.

It scarcely differs sufficiently from *Convolvulus Nil* to warrant its being considered more than a variety of that, or that of this. In that the leaves of plants growing in the same situation are less divided and the lobes shorter and less pointed. The rim of the corol five-angled, and the angles pointed as in Dillenius's figure whereas in *I. carulea* it is nearly circular.

#### 8. *I. phoenicea*, R.\*

Annual, twining. *Leaves* broad-cordate; *posterior* edges often variously lobate. *Racemes* dichotomous, many-flowered. *Leaflets* of the calyx end subulately. *Stamina* erect. *Stigma* globular.

A native of the southern parts of the *Coromandel* coast, the seeds were received into this garden from Dr. Berry, who procured them from Dindigul. In Bengal it thrives luxuriantly, and is in blossom most part of the year, but chiefly during the cool season. This plant has also been reared from seeds received from the island of *Trinidad*; there is therefore the more reason to compare it with *I. coccinea*.

*Stem* and *branches* twining, young parts somewhat angular, and twisted.—*Leaves* alternate, petioled, cordate, acuminate, sometimes three-lobed; sides and posterior edges variously dentate, sinuate, or lobate; smooth on both sides, from two to six inches each way.

\* *I. angularis* Willd; and most probably also *I. angulata*, Lam. illustr. i. 464. Dict. vi. 12.—N. W.

—*Petioles* nearly as long the leaves, channelled.—*Racemes* axillary, solitary, generally two-cleft, much longer than the leaves.—*Flowers* remote, large, of a most beautiful bright crimson colour.—*Calyx* smooth, the leaflets subulate at the end.—*Corol*; tube nearly two inches long, contracting towards the base, slightly curved; border at first expanded, afterwards a little revolute.—*Stamina* projecting considerably beyond the mouth of the tube of the corol.—*Stigma* subglobular. *Capsules* smooth, four-celled, with a single seed in each.

*Obs.* This is by far the most gaudy plant of the kind I have yet met with, no painter can do justice to the brightness of its flowers.

9. *I. Pes-tigridis*, Willd. Spec. i. 886.

Annual, diffuse, or twining, hairy. *Leaves* palmate. *Peduncles* longer than the petioles. *Flowers* several in a solitary, aggregate, involucred head.

Beng. Languli-luta.

Pulli-schovadi, Rheed. Mal. xi. 121. t. 59.

Volubilis zeylanica, Dill. Elth. tab. 318. f. 411.

This is one of the most common, and generally diffused plants we have in India. Flowering time the rainy season chiefly.

*Stems* diffuse, or twining when supported, round, and very hairy; hairs fulvous, and diverging.—*Leaves* alternate, long-petioled, palmate, hairy; lobes from five to nine, lanceolate, entire.—*Peduncles* long, or longer than the petioles, hairy, each supporting a single head of sessile, white, or pink flowers; the latter variety is smaller than the white one.—*Involucre* from eight to twelve-leaved; leaflets unequal, recurvate, lanceolate, obtuse, hairy.—*Calyx* of five lanceolate, acute, unequal, hairy leaflets.—*Corol*, with its five lobes deeply emarginate.—*Stigma* of two round lobes.—*Capsules* two-celled.—*Seeds* two in each cell.

10. *I. Quamoclit*, Willd. Spec. i. 879.

Annual, twining. *Leaves* pinnate, leaflets filiform. *Peduncles* one or two-flowered.



*Tsjuria-cranti*, *Rheed. Mal.* xi. 123. t. 60.

*Flos cardinalis*, *Rump. Amb.* v. 155. t. 2.

*Camalata*, *Asiatick, Res.* iv. 256.

*Sung.* कामलता, *Kamaluta*, तुरूलता, *Turooluta*.

*Beng.* Lal kamluta or lal turooluta, the red variety; sweta kamluta or sweta turooluta, the white flowered variety.

A native of various parts of India. Flowers during the rainy season in Bengal.

### 11. *I. pileata*, R.\*

Perennial, twining. *Leaves* profoundly round-cordate, villous. *Flowers* a few, sessile in a peltate, four-cornered, peduncled, axillary *bonnet*.

This rather small, villous species has been introduced from China into the botanic garden at Calcutta, where it blossoms and ripens its seeds during the cool dry months of November—February. It is particularly remarkable on account of its entire, rhombiform concave *bonnet* or *involucre*, in the bottom or centre of which, from three to six middle sized, rosy, funnel-shaped flowers sit; it is hairy round the flowers, as are also the unequal leaflets of the calyx.

## CALYSTEGIA. Brown.

*Calyx* five-parted, enclosed in two foliaceous *bractes*. *Corolla* companulate, five-plicate. *Style* entire. *Stigmas* two, obtuse. *Cap-sule* one-celled.

### 1. *C. hederacea*, Wall.

Smooth, twining, sarmentose. *Leaves* trilobate-hastate, acute, petioled, lateral lobes bi-trifid; *radical* oblong, cordate sub-entire. *Peduncles* axillary several times longer than the leaves, one-flower-

\* There is an indifferent specimen of this remarkable plant in the hortus siccus of my late friend Dr. B. Heyne, attached to this garden, labelled "*Sponsea peltata*.—*I. Coilonensis*, Klein."—N. W.

ed. *Bractes* ovate, acute, much larger than the obtuse subdentate calycine leaves, half the length of the corolla. *Filaments* glandular.

Common in the valley of Nipal, along water courses, and similar moist places; blossoming during the hot season.

*Root* creeping, woody, perennial.—*Stems* several, slender, angular, twining, sometimes running along the ground to a considerable extent, as well as the other parts of the plant smooth.—*Leaves* from one to two inches long, cordate, with a deep broad sinus, intermediate lobe lanceolate, acute, lateral lobes triangular, divergent, with from two to three broad bluntish teeth or lobes, which in the uppermost are so deep as to give the leaf the appearance of being five or seven-lobed; when observed under a microscope their surface appears dotted with transparent points; those near the base of the plant sub-entire, oblong-cordate. *Petioles* nearly equalling the leaves, furrowed.—*Flowers* rose-coloured, solitary, on axillary, angular, thickish peduncles, which are much longer than the leaves, the lowermost often measuring four inches; those above gradually shorter.—*Bractes* opposite, ovate, subcordate, acute, nerved, obscurely crenulate, almost concealing the *calyx*, which consists of five membranaceous unequal *leaflets*, the exterior ovate-obtuse, the inner ones smaller, lanceolate-acute.—*Corolla* twice as long as the calyx, with a five-lobed, bluntish border, each lobe ending with a few short hairs.—*Stamina* nearly equal, reaching to the middle of the corolla; filaments flattened, broader at the base, with a few glandular hairs; anthers linear, erect.—*Ovarium* ovate, four-furrowed, incompletely divided into two cells by two opposite parietal narrow septa which do not reach the axis; *ovula* four, erect.—*Style* capillary, longer than the stamens; *stigma* consisting of two cylindrical slender obtuse lobes.

*Obs.* This species is very much like *Convolvulus arvensis* (to which as I have remarked above Roxburgh's *C. Malcolmii* undoubtedly belongs) in its stem, leaves, and in the colour and size of the flowers; the calycine bractes easily distinguish them from each other.—N. W.

## CAMPANULA. Schreb. Gen. 290.

*Calyx* five-parted. *Corol* campanulate. *Filaments* with their lobes dilated, and arched. *Stigma* from three to five-cleft. *Capsule* inferior, from three to five-celled, opening by pores on the sides.

### 1. *C. dehiscens*, R.\*

Annual, ascending, round, a little hairy. *Leaves*, sessile, linear lanceolate, remotely toothed. *Flowers* from five to six, terminal. *Capsules* without lateral pores and opening at the apex.

A native of Bengal. Flowering time the cold, and beginning of the hot season.

*Root* nearly simple, white, annual.—*Stems* and *branches* ascending, about a foot high, round, hairy.—*Leaves* alternate, sessile, linear lanceolate, remotely, and lightly toothed; from one to two inches long.—*Flowers* terminal, corymbiform, white, pretty large, bell-shaped.—*Calyx*, *corol*, *stamens* and *pistil* as the genus.—*Capsule* obovate, without lateral pores, opening at the apex.—*Seeds* numerous, minute.—*Receptacle* reniform, in the angle of each cell.

### 2. *C. lancifolia*, R.†

Ramous, smooth. *Leaves* sub-opposite and alternate, short-petioled, lanceolate, serrate, acuminate. *Flowers* terminal. *Calycine* leaflets lanceolate and laciniate. *Capsules* obovate, five-celled.

\* *C. dehiscens*, Roxb. hort. beng. 85; et Wall. in Asiat. Res. xii. 571, c. *icone*.—N. W.

† I think this may be a species I have met with in the northern parts of Bengal. My plant grows on the bare interstices between the tufts of long grass in the valleys which are overflowed during the rains, where it springs as soon as the floods dry up. It is a very slender annual plant, a foot or a foot and half high, without branches, except near the top, where it shoots out sometimes two or three small ones an inch or two long, each terminated by a single nodding flower about the size, shape, and colour of those of *C. rotundifolia*, the radical leaves I have not seen, as they soon drop off, the six or eight leaves (for there are not more on the full grown plant) are lanceolate, or even linear. It is found in flower from November to March or April, and perishes after having perfected its seeds. *Ed.*

A native of the moist vallies of Chittagong, where it flowers in October.

*Additions by N. W.*

3. *C. sylvatica*, Wall.

Rough with short hairs. *Stem* slender, sub-dichotomous. *Leaves* linear, sub-entire, approximate toward the middle of the plant. *Flowers* long-peduncled, panicled. *Corolla* pubescent, with a campanulate tube and lanceolate *laciniæ*. *Ovarium* prismatic

*C. stricta*, Wall in *Asiat. Res.* xiii. 37.

Delights in moist ground in the forests of the valley of Nipal; blossoming in the dry part of the summer, that is to say in April and May.

*Obs.* As there is already a species called *stricta* by Linneus I have been obliged to alter the name I had once given to this very elegant plant. I have nothing to add to my description, l. cit. except that in the fresh plant I have always found a few remote glandular toothlets on the leaves which however, are so small as to disappear entirely after being dried.

4 *C. agrestis*, Wall.

Smooth, ramous, slender. *Leaves* linear, very narrow, with a few remote toothlets; the uppermost very small, entire. *Flowers* terminal, panicled. *Laciniæ* of the *calyx* half the length of the infundibuliform corolla.

A delicate species which is common in fields along the sides of paths in the valley of Nipal, blossoming in March.

It is generally speaking smooth, though sometimes with a few remote short hairs. *Root* fibrous.—*Stem* from six to twelve inches high, erect, very thin and slender, round, divided from the base into many almost simple ascending branches; the upper part sub-dichotomous. *Leaves* alternate, from one to two inches long, very

narrow, smooth, sessile, acute, denticulate, remote; the lowermost lanceolate, a little hairy, the floral ones very small, almost subulate, perfectly entire.—*Flowers* smooth, very small, blue, on terminal filiform elongated smooth *peduncles*.—*Calyx* *segments* linear, about half the length of the corolla.—*Corolla* infundibuliform, with lanceolate *laciniæ*.—*Base* of the filaments broad, ciliated.—*Stigma* divided into three villous linear lobes. *Capsule* oblong-clavate, about five lines long, bursting at the top.

*Obs.* It comes near to *C. gracilis*, Forst. but differs in the size and relative proportion of its flowers; which are very much like those of *C. dehiscens*. To this last mentioned species it has indeed a very great resemblance; but it is a taller much smoother plant, and the leaves are narrower and less toothed.

#### 5. *C. aristata*, Wall.

Smooth, erect. *Cauline leaves* narrow-linear, sessile, with glandular toothlets; *radical* ones lanceolate, on very long petiols. *Flowers* solitary, terminal, erect. *Laciniæ* of the *calyx* very long, subulate, equalling the cylindrical ovary; *corolla* half the length of the calyx.

Gathered together with *C. colorata* at Ludak by my plant-collectors, who accompany my most excellent and esteemed friend Mr. Moorcroft, on his journey to that country.

*Root* rather thick, almost fusiform, divided at the upper part into several portions.—*Stems* as well as all the other parts perfectly smooth, slender, upright, not thicker than a pack-thread, many from each root, simple, naked toward the apex. *Leaves* linear, erect, scattered, longer than their interstices, acute, three inches long, not more than two lines broad, marked with alternate, remote, glandular toothlets, sessile. *Radical leaves* and those on the lowest part of the stem lanceolate, waved, acute, at both ends, about an inch and a half long, supported by filiform *petiols*, which are twice or thrice as long as themselves.—*Flower* solitary, terminal, erect, small. *Laciniæ* of the *calyx* very narrow, linear, almost subulate, acumi-

nate, about seven lines long, unequal. *Corolla*, faint blue, campanulate, only half the length of the calyx, divided into five acute lobes. *Stamina* very short. *Ovarium* sub-cylindric, tapering at its base, and club-shaped, as long as the calycine lacinae. *Sigma* elevated to the mouth of the corolla, three-lobed; lobes erect, with recurved apex, long, pubescent.

### 6. *C. fulgens*, Wall.

Simple, erect, hairy. *Leaves* lanceolate, acute, short-petioled, serrate. *Raceme* terminal, consisting of fascicled flowers. *Calycine segments* linear, straight, equalling the corolla and ovary. *Capsule* ovate, ten-ribbed.

I have found this species in the valley of Chitlong which is considerably higher than that of Nipal, and on mount Chanda-giri which separates the two. It has also been brought to me by a collecting party from the road to Gosain-Than. It blossoms in the rains.

Newar name *Usery-Soah*.\*

An erect, annual, rather large species, covered with copious, spreading, silvery, very fulgent hairs.—*Root* simple, fibrous.—*Stem* mostly undivided, though sometimes there is one or two simple erect branches; moderately thick, with several elevated parallel lines or angles.—*Leaves* scattered, erecto-patent, exceeding their interstices, from one to three inches long, lanceolate, acute or acuminate, with broad cuspidate serratures, tapering much and nearly entire at the base, short-petioled, hairy on both sides, with elevated rib and parallel oblique nerves underneath; the radical ones broader, sub-ovate, bluntish; those of the upper part of the stem, or *floral* ones, linear-lanceolate, sessile.—*Petioles* short, hairy, margined.—*Flowers* small, blue, fascicled, sub-sessile; fascicles, two or three-

\* I avail myself of this opportunity for remarking, that the names which are given to plants by the natives of Nipal are in general very uncertain and fluctuating; and that I shall only make use of them on occasions, when I have reason to be tolerably satisfied as to their correctness.—N. W.

flowered, in the uppermost axills, becoming more and more approximate toward the apex of the stem where they are supported by linear acuminate bractes, which exceed their own length ; forming a terminal, oblong raceme from four to six inches in height.—*Calyx* smooth, divided into five linear, acute, rather spreading segments, about the length of the corolla, or exceeding it a little.—*Corolla* five-lobed ; lobes oblong.—*Filaments* very broad at the base, valvate, ciliate. *Anthers* erect, linear.—*Ovarium* club-shaped, as long as the calycine lacinia, ten-nerved.—*Stigma* three-lobed, pubescent.—*Capsule*, ovate, about five lines long, marked with six prominent ribs, a little hairy, opening towards its apex with three round pores.

7. *C. pallida*, Wall. in *Asiat. Res.* xiii. 375.

Hairy. *Stem* branchy. *Leaves* lanceolate, serrate, sub-petiole. *Peduncles* terminal, very long, paniced. *Lacinia* of the calyx nearly equalling the corolla.

Inhabits the valley of Nipal and the surrounding mountains ; blossoming in April and May.

8. *C. ramulosa*, Wall.

Erect, hairy. *Stem* paniced, sub-flexuose. *Leaves* lanceolate, sinuato-dentate, acute. *Flowers* terminal and axillary, nodding, on longish bracted peduncles. *Lacinia* of the calyx triangular, toothed, shorter than the corolla. *Ovarium* turbinate, equalling the calyx.

Gathered by my people on the road to Gosain-Than ; flowers in October.

The whole plant covered with spreading soft silky hairs.—*Stem* erect, flexuose, about the size of a crow-quill ; one or two feet high, slightly angular ; branches numerous, alternate, spreading, paniced.—*Leaves* lanceolate, rather grossly sinuate-dentate, acute, tapering at the base, short-petioled ; from one to two inches long, hairy on both sides, nerved underneath. Those on the branchlets small, linear-lanceolate.—*Flowers* terminal and axillary, gently nodding, forming an open panicle, on round, hairy, long, leafy peduncles.—*Calyx* hairy ; *lacinia* lanceolate, acuminate, spreading, about half as long as the

corolla, with one or two teeth on each side.—*Corolla* campanulate, a little hairy without, blue, divided into five ovate, acute *laciniæ*.—*Ovarium* turbinate, ribbed, very hairy, as long as the calyx.

9. *C. cana*, Wall.

Densely hoary. *Stems* adscending, branchy. *Leaves* approximate, lanceolate, dentate, sessile. *Flowers* terminal. *Calycine laciniæ* lanceolate, dentate, nerved, shorter than the infundibuliform *corolla*, and equalling the turbinate *ovarium*.

A native of Himalaya, near Gossain-Than; blossoming in October.

*Root* fibrillose.—*Stems* several, adscending, from six to ten inches long, as thick as a pack-thread, branchy, densely covered with spreading white hairs.—*Leaves* scattered, very numerous and approximate, sessile, lanceolate, rather acute, obtusely dentate, from half an inch to an inch long, hairy above, densely clothed underneath with white tomentum, and marked there with strong elevated nerves.—*Floral* leaves very small, bractiform, linear.—*Flowers* terminal on the stem and branchlets, short-peduncled, rather large for the size of the plant, blue.—*Laciniæ* of the *calyx* lanceolate, acuminate, grossly toothed, nerved, tomentose.—*Corolla* infundibuliform, hairy on the outside, twice the length of the calyx; *laciniæ* lanceolate, acute. *Base* of the *filaments* very broad, ciliate. *Ovarium* turbinate, tomentose, ribbed.

*Obs.* The whole plant is covered with minute, soft, white tomentum, especially the under surface of the leaves and the ovaria; the stem and the branches are besides densely beset with long spreading subulate shining hairs.

10. *C. colorata*, Wall.

Erect, villous, canescent. *Stems* simple. *Leaves* scattered, lanceolate, acute, repand-crenate. *Peduncles* axillary and terminal, elongated.—*Calycine segments* triangular, entire, shorter than the *corolla*; and longer than the turbinate *ovarium*.



This is another species collected by my people at Ludak in 1821.

*Root* long, tapering, sub-entire.—*Stems* slender, erect, cespitose, as well as the leaves and calyces covered with soft greyish pubescence, slightly flexuose, purplish, round.—*Leaves* lanceolate, scattered, an inch and half long, exceeding their interstices, acute at both ends, sessile, unequally repand-denticulate, villous on both sides.—*Flowers* axillary and terminal, on filiform lengthened peduncles, which bear from one to three bractiform leaflets.—*Calyx* purplish, divided into five triangular, acute, entire segments.—*Corolla* campanulate, a little longer than the laciniae of the calyx, pubescent; lobes lanceolate, acute. *Filaments* very broad and ciliated at their base.—*Ovarium* shorter than the calyx, prismatico-turbinate. *Stigma* three-lobed.

#### 11. *C. carnosa*, Wall.

Smooth, fleshy, procumbent. *Leaves* ovate, cuspidate-serrate, petioled.—*Flowers* axillary, on capillary peduncles, which equal the leaves. *Calyxine laciniae* linear, shorter than the bilobate corolla. *Filaments* linear, not dilated at the base.—*Capsule* prismatic.

I have only found this plant on rocks near rivulets towards the middle of mount Shivapoor; blossoming in June.

A small, smooth, fleshy plant. *Root* creeping, with capillary fibrillae.—*Stem* procumbent, creeping at the base, very thin and slender, from six to eight, even as far as twelve inches long, obscurely three-sided, with elevated ribbed angles, branched, purplish, semi-pellucid.—*Leaves* alternate, petioled, ovate, sometimes slightly cordate at their base, acute, serrate; serratures gibbous, cuspidate, incumbent, soft and fleshy, an inch or an inch and half long, opaque above, and with a few scattered hyaline hairs; smooth and shining underneath, and dotted with some pellucid minute points; the uppermost very close together; all the rest rather distant.—*Petiols* about as long as the leaves, with a slight furrow above, the base sub-decurrent and forming the elevated angles of the stem; the upper-

most much shorter than the leaves.—*Flowers* very small, of a pale blue, nearly white colour, perfectly smooth, solitary, rarely geminate, on capillary axillary peduncles, which are a little shorter than the leaves, having at the base a couple of minute, linear bractes.—*Calyx* with erect, linear, entire *laciniæ*.—*Corolla* infundibuliform, more than twice the length of the calyx; *tube* very short; *limbus* sub-bilabiate, quinquefid; *laciniæ* oblong, acute, equal; the two uppermost more parallel and erect, the rest spreading.—*Stamina* quite distinct, distant, a little shorter than the corolla; *filaments* flat, not valvate at the base, inserted together with the corolla on the disc of the ovarium; *anthers* erect, linear.—*Ovarium* oblong, obscurely triangular, trilocular, many-seeded; its vertex not elevated, as is usual in this genus, within the calycine laciniæ, but covered by a fleshy yellowish disc.—*Style* filiform. *Stigmas* three, linear.—*Capsule* club-shaped, prismatic, crowned with the permanent calyx, elevated on a lengthened peduncle, bursting towards its basis with three round valves.

*Obs.* This species is remarkable on account of its filaments not being valvate, and their adhering to the base of the corolla; also in regard to the bilabiate corolla. It seems to be intermediate between *Campanula* and *Lobelia*.

### CODONOPSIS. Wall.

*Calyx* superior, five-parted. *Corolla* campanulate, equal. *Filaments* sub-linear. *Stigma* three-lobed. *Capsule* three-celled, many-seeded, bursting at the apex in three short valves.

#### 1. *C. viridis*, Wall.

*Leaves* cordate-oblong, alternate, villous underneath. *Calycine laciniæ* linear; distant, recurved.

I have found this remarkable plant in the dark forest at the top of Shivapoor, in blossom during the rains, and with ripe fruit in Oc-

tober. It has also been brought to me from much more northerly and higher parts of Nipal towards Gosain-Than, where it blossoms later.

An extensively twining, very ramous, annual plant, with slender, round, smooth, shining, sometimes purplish *stem*, of the thickness of a crow-quill. *Branches* alternate, numerous, from one to two feet long, leafy.—*Leaves* alternate, spreading, membranous, ovate-oblong, tapering into an acute apex, or acuminate, obscurely crenulate, base cordate, with rounded lobes, from three to five inches long, sparingly beset on the upper, bright-green, opaque surface with short, soft, adpressed hair, densely villous, glaucous underneath, with slender elevated rib and oblique reticulated nerves.—*Petioles* rounded, tortuous, villous, half an inch long.—*Flowers* large, drooping, solitary, placed irregularly along the branches, or axillary, sometimes opposite the leaves, possessing a very disagreeable narcotic smell, glaucous, pubescent.—*Peduncles* filiform, curved, naked, pubescent, somewhat enlarged under the flower.—*Calyx* persistent, consisting of five equal, very distant, linear, acute, denticulate, recurved, two or three-nerved lobes, about five lines long, and separated by rectilinear naked interstices of four lines.—*Corolla* ample, bell-shaped, one inch long, of a thickish, rather fleshy texture, and a pale yellowish green colour; *tube* ventricose, inserted round the vertex of the ovarium, the inside with small purple dots; *border* spreading, an inch and half wide, five-parted; *laciniæ* ovate, acute, half the length of the tube, very obscurely marked along the margins, with small elevated papillæ. *Aestivation* valvate.—*Stamina* five, distant, distinct, erect, two-thirds shorter than the tube of the corolla, opposite its laciniæ; *filaments* fleshy, smooth, subulate, base scarcely widened, inserted within the base of the corolla; *anthers* erect, linear, as long as the filaments, two-celled.—*Ovarium* large, fleshy, hemispherical, depressed, ten-nerved, the vertex obscurely five-cornered, convex, gently elevated within the bottom of the flower, shining, purple, umbilicated, three-celled; *ovula* very numerous, attached to three very thick and fleshy axile *placentæ* which protrude so much as to render the cells very narrow and parietal.

—*Style* smooth, rounded, rather longer than the stamens, widening at the persistent base. *Stigma* large, fleshy, sub-infundibuliform, three-lobed; lobes ovate, blunt, recurved.—*Capsule* nearly round, ten-nerved, pubescent, two-thirds inferior, its conical vertex considerably elevated above the calyx, which has now enlarged into a distinct broadish margin, with its distant laciniae reflexed; about the size of a large cherry, three-celled, bursting partially at the apex into three small divergent subulate valves. *Dissepiments* very narrow, ventral.—*Placentæ* large, ovate, convex, fungiform, inserted into the inner angle of the cells; their surface cellular.—*Seeds* exceedingly numerous, minute, sub-cylindric, ferruginous.

## 2. *C. purpurea*, Wall.

*Leaves* ovate-oblong, smooth, together with the branches opposite. *Calyxine laciniae* triangular, spreading.

A native of precisely the same places as the first species; it is however of much rarer occurrence on Sheopore,\* (Shivapoor) and more common towards the Himalaya. Time of flowering the same.

It is perfectly smooth on all parts. *Stem* as in the preceding; of a straw-colour, and shining when dry. *Branches* mostly opposite, so as to give the plant a trichotomous appearance, jointed.—*Leaves* opposite or sub-opposite, in remotish pairs, ovate-oblong, attenuate-acute, base rounded, from three to five inches long, entire or obscurely crenulate, perfectly smooth, very glaucous underneath.—*Petioles* furrowed above, round, jointed at the base, half an inch long.—*Flowers* large and showy, solitary, terminal, or in alternate axils, sometimes lateral, mostly erect, dark-purple, glaucous on the outside, tetrid.—*Peduncles* naked, from one to three inches long.—*Calyx*

\* This word is differently pronounced in different parts of India. It ought to be written Shiva poorā; but my friend Wallich being desirous of writing the word according to the provincial pronunciation of Nepāl, his way of writing it is retained in the text; though it is highly probable they pronounce it Shiwpoor, with the i short as in tin, and not Sheopore, with the e long as a in name, the sound allotted to e in every system of writing Indian words with Roman letters. Ed.

deeply divided into five triangular ovate, acute, entire, spreading lobes, measuring about five lines in length; the interstices acute-angular. — *Corolla* bell-shaped, rather longer than that of the other species; *tube* equal; *laciniæ* spreading, ovate, acute. *Stamina*, *style*, and *stigma* as in the preceding; *ovarium* rather smaller, turbinate, covered with a purplish bloom. — *Fruit* not seen.

*Obs.* The habit of these beautiful plants is very different from that of *Campanula*; and they differ so much from that section of it which is denominated *Erinoides*, whose capsule also bursts at the apex, that I have not hesitated constituting them into a separate genus. In that the corolla is sub-irregular, and the stigma simple; in this it is perfectly regular, and the stigma three-lobed. The two species are very different from each other; *C. viridis* has alternate branches; cordate, villous leaves; linear, recurved, calycine segments, which stand remote from each other, and a greenish, bell-shaped, ventricose, rather shorter corolla; *purpurea* is quite smooth, has opposite jointed branches and leaves, which are cordate, flowers purple, not ventricose, calycine lobes triangular, not distant nor revolute. The flowers of both possess a very disagreeable smell, somewhat like that of *Bignonia indica*. — N. W.

### 3. *C.?? thalictrifolia*, Wall.

*Stem* simple, adscending, one-flowered. *Leaves* pinnate and bipinnate; *leaflets* kidney-shaped, villous. *Calyx* inferior.

A native of Gosain-Than, where it blossoms in August.

*Stem* very slender and weak, adscending, variously bent, sometimes sub-scandent, from eight to fourteen inches long, not thicker than a packthread, undivided, upper two-thirds naked, besprinkled with short, grey, soft hairs. — *Leaves* alternate, mostly bipinnate, approximate, much longer than their interstices, occupying the lowest third of the stem. *Petiol* about an inch and half long, as well as the rachis filiform and hairy. *Pinnæ* opposite, in one or two pairs, with a terminal odd one, three inches long. *Pinnulæ* opposite, three or four pairs, with an odd one, sub-rotund-reniform, obtuse, remotely and

obtusely crenate, or obscurely three-lobed, frequently unequilateral, about four lines long and five broad, covered on both sides with copious adpressed, ash-coloured hair; on short capillary *petiols*. The uppermost leaves are simply pinnate.—*Flower* elevated on the naked end of the stem, solitary, nodding, large, about an inch long, blue.—*Calyx* flattish, a little hairy, deeply divided into five linear-lanceolate, acute, somewhat spreading, nearly equal, denticulate *lacinia*, which are narrower at their base, and therefore appear distant.—*Corolla* smooth, veined, campanulate, much longer than the calyx; *limb* widening, five-lobed, lobes round-ovate, obtuse, terminated by a small, glandular, somewhat hairy point. *Throat* pervious, naked.—*Stamina* five, straight, distinct, shorter than the corolla; *filaments* linear, somewhat broader at the base where they are attached to the bottom of the corolla, or rather both these parts to one and the same point within the *lacinia* of the calyx; *anthers* erect, with a few hairs on the back, bilocular.—*Ovarium* above, ovate-oblong, acute, smooth, large, two-celled; *ovula* numerous, attached to an oblong axile placenta. *Style* short. *Stigma* clavate, fleshy, three-lobed: lobes obtuse, pubescent. *Fruit* not seen.

*Obs.* This is a very doubtful plant which I am unable to refer to any known genus. It approaches on the one hand to *Polemonium* (under which I ought to have placed it), and on the other to *Campanula*; its compound leaves give it some analogy to *Codonopsis*, from which, however, it differs by its decidedly superior ovary. It will, I doubt not, be found sufficiently distinct from them all to form a separate genus. Its leaves are not unlike those of some of the minute leaved *Thalictra*; the flower handsome, elevated considerably on the naked upper part of the stem.

*PHYTEUMA. Schreb. Gen. N. 292.*

*Calyx* semi-superus, five-parted. *Corol* rotate, inserted on the calyx. *Germ* inferior, three-celled, *ovula* numerous, on a pendulous

receptacle from the top of each cell. *Stigma* three-lobed. *Capsule* three-celled. *Seeds* numerous.

1. *P. begonifolium*, Roxb. hort. beng. 85.

Creeping, woolly. *Leaves* alternate, semicordate, serrate. *Racemes* axillary, secund, recurvate. *Bractes*, cuneate.

A native of Pulo-Penang, where Mr. W. Roxburgh found it in forests shaded by trees and shrubs, and with flowers and ripe seeds in June and July

*Stems* somewhat dichotomous, round, fleshy, spreading on the ground, and rooting at the insertion of the leaves, the younger parts as well as the petioles and racemes clothed with a harsh, ferruginous, woolly pubescence.—*Leaves* alternate, petioled, semicordate, (as in some species of *Begonia*), serrate, acute, pretty smooth; length six or eight inches, breadth about half the length.—*Petioles* from one to two inches long.—*Stipules* none.—*Racemes* axillary, solitary, secund, revolute, twice the length of the petioles.—*Flowers* short-pedicelled, alternately arranged in two rows on the anterior side of the raceme; while two rows of alternate, cuneate, woolly bractes occupy the posterior side.—*Calyx* one-lobed; tube gibbous, and growing to the lower half of the germ. *Border* of five, sub-orbicular, woolly, permanent segments. *Corol* one-petalled, rotate, tube very short, and united with the calyx into one envelope which closely embraces the upper part of the germ; border of five, oblong segments, alternate with those of the calyx, and double their length, withering.—*Filaments* five, short, inserted partly on the tube and top of the germ. *Anthers* oblong.—*Germ* inferior, oblong, three-celled, each cell containing numerous ovula attached to a long, free, linear receptacle, which is united, by a slender pedicel, to the top of the cell. *Style* very short and thick.—*Stigma* concave, with a thick fleshy three-lobed margin.—*Capsule* oblong, clothed with the woolly tube of the calyx, and crowned with the segments of its border, as well as the withered corol, three-celled, (in what manner they open I have not been able to ascertain.)—*Seeds* very numer-

ous, adhering to the long, filliform, free receptacles, which are attached to the apex of the capsules as already mentioned.

*Addition by N. W.*

The following description has been given of this plant by my highly valued friend Mr. Jack in *Malayan Miscellanies* i. 5, who has favoured me with abundance of specimens. He informs me that the Malay name is *Jelatung-rusa*.

"A small herbaceous plant. *Stem* procumbent, one or two feet in length, thick, villous, tufty at the summit, with fasciculate hairs. *Leaves* alternate, petiolate, semicordate, unequilateral, turning to one side, eight inches long, acute, with gross sub-spinescent serratures, villous beneath, adult leaves smooth above, nerves generally dichotomous. *Petioles* thick, round, furrowed above. *Stipules* none. *Peduncles* axillary or supra-axillary. *Flowers* unilateral, erect, arranged in two rows on a recurved spike, nearly sessile, crowded. *Bractes* cuneiform, obtuse. *Calyx* semi-superior, ovate, villous, five-lobed, lobes obtuse. *Corolla* white, campanulate, persistent, limb recurved, five-lobed, lobes obtuse; after florescence the corolla becomes green and enlarges. *Stamina* five, erect, short, inserted on the calyx and opposite to its divisions. *Anthers* linear, acute. *Ovary* surrounded by the calyx and connected with it by five longitudinal septa or processes from which the stamina spring, three or four-celled, many-seeded, placentæ from the inner angles of the cells. *Style* short, thick. *Stigma* large, thick, three-lobed. *Capsule* three or four-celled, containing numerous seeds arranged on convex placentæ.

"The septa which unite the calyx and ovary appear continuous with the filaments of the stamina. The young parts are densely villous, but the hairs are easily rubbed away. In drying, the plant assumes a bright yellow colour. It appears extremely doubtful whether this plant be truly referrible to *Phyteuma*; it does not however agree well with any other genus of the family of *Campanulaceæ*, and it will



deserve consideration whether it ought not to constitute a new genus in that order."

*LOBELIA.* Schreb. Gen. N. 1363.

*Calyx* five-cleft. *Corol* one-petalled, irregular. *Anthers* united. *Capsule* inferior, two or three-celled.

1. *L. nicotianifolia*, Heyne's Mss.

Erect. *Leaves* sub-sessile, lanceolar, acute, entire. *Raceme* terminal.

A stout, tall species, first described by Mr. Heyne, who found it indigenous in the vicinity of Bangalore.

*Addition by N. W.*

Specimens of this fine plant are preserved in Dr. Heyne's herbarium marked *L. acuminata*. It has been given in *Syst. Veg.* v. 47, under the name of *nicotianifolia*, Roth.

A tall, herbaceous, erect, pubescent species.—*Stem* as thick as the little finger, angular, fistulous, covered with soft pubescence, with scattered, simple, erecto-patent, paniced *branches*.—*Leaves* very numerous, scattered irregularly, spreading, lengthened, lanceolate, acuminate, contracted at the base, sessile, marked along the margins with minute gland-cuspidate crenatures, pubescent underneath, with parallel oblique nerves, from six to eight inches long; the uppermost gradually smaller, about two inches long, linear-lanceolate, more distinctly serrulate.—*Racemes* terminal, cylindric, from six to fourteen inches high, and three fingers broad, erect, with copious glaucous pubescence, densely covered with spreading lilac-coloured, large *flowers*, leafy. *Rachis* thick and angular. *Peduncles* approximated, about an inch and a quarter long, almost villous, supported by a lanceolate, acuminate, serrulate, foliaceous,

nearly equalling bracte ; their apex incurved, adscending.—*Calycine lacinia* linear-lanceolate, acuminate, serrulate, spreading, two-thirds shorter than the tube of the *corolla*, which is cylindrical, about an inch long, pubescent, cleft longitudinally.—*Limbus* unilateral, almost equalling the tube, five-cleft ; the intermediate three laciniae longitudinally cohering into an ovate, acute lamina ; the outer ones more deeply separated, linear, distinct.—*Column* of the *filaments* erect, smooth ; *anthers* purple, connected into an oblong tube, whose apex is hairy downwards.—*Capsule* large, round, pubescent, nerved, two-celled.

2. *L. trigona*, R.

Annual, base creeping, erect parts three-sided. *Leaves* sessile, cordate, serrate. *Peduncles* axillary, longer than the leaves, one-flowered.

A small, annual, ramous plant which delights in wet pasture ground, and appears during the wet and cold seasons.

*Stems* near the root creeping, above erect, ramous, three-sided, smooth, the whole plant is from six to twelve inches high.—*Leaves* sub-sessile, cordate, grossly serrate, smooth.—*Peduncles* axillary, solitary, erect, length of the leaves or longer, two-bracted at the base.—*Flowers* small, blue.—*Corol* inserted in the mouth of the calyx.

*Addition by N. W.*

This is the same as *L. stipularis*, Roth. in Syst. Veg. iv. 67, who has mistaken the two above-mentioned small opposite recurved divaricate bractes at the base of the peduncle, within the axils of the leaves, for a pair of *stipules*.

3. *L. radicans*, Willd. Spec. i. 948.

Annual, creeping, smooth. *Leaves* sessile, lanceolate, remotely

serrulate. *Peduncles* axillary, solitary, twice the length of the leaves, one-flowered.

Accidentally introduced from China, into the botanic garden at Calcutta, where it blossoms freely during the rains. Our plants are but small, very ramous, spreading over the soil, and striking root at every branchlet. The flowers are large for the size of the plant, pink-coloured; segments of the corolla equal, unilateral, and narrow-lanceolate, with two green glands under the two middle sinuses, opposite to the long, green, two-lobed stigma.

*Additions by N. W.*

This charming little plant seems to be different from that of Thunberg, Linn. Trans. ii. 330. (*L. Erinus* Flor. jap. 325,) who describes its leaves as being undulated, decurrent, which ours are not. It is certainly perennial; it is only the stems that are creeping; the branches are erect, from four to six inches long, forming dense and compact tufts, which render the plant peculiarly well suited for margins of beds.—*Root* consisting of thick, white cylindric fibres. *Stem* as thick as a packthread, round, smooth; *branches* with two opposite very small furrows, not angular. *Leaves* bifarious and alternating, often vertical, from half an inch to an inch long, those of the middle of the branches longest, the rest gradually decreasing, slightly ciliated, especially towards the roundish basis which is supported by an extremely short petiol; the margins on each side with four or five minute cuspidate glandular crenatures.—*Flowers* delightfully fragrant. *Tube* of the corolla twice as long as the calyx, pubescent, split two-thirds of its length. *Tube* of the anthers incurved, a little hairy; the mouth ciliated below.—*Stigma* nodding, exserted together with the apex of the style beyond the anthers, purplish, scabrous, with two rounded diverging lobes.—*Ovarium* cuneiform-oblong, ten-lined.—The plant seems also to differ from *L. campanuloides* of the same author, l. cit. 331 (*L. erinoides* fl. japan 326), and *L. chinensis*, Loureir. Cochinch. ed. Willd. ii. 623.

4. *L. zeylanica*, Linn.

Prostrate and creeping, pubescent. *Stems* and *branches* round. *Leaves* short-petioled, ovate, sub-cordate, acute. *Peduncles* axillary, equalling the leaves, one-flowered.

I have not seen it in Bengal. It is common in fields about Silhet; blossoming in the hot and rainy season; introduced from thence into the Botanic garden at Calcutta, in 1815.

*Stem* several feet long, prostrate, the base creeping, as thick as a crow-quill, rather fleshy.—*Branches* scarcely ascending.—*Leaves* alternate, fleshy, about an inch long, concave above, minutely serrulate, serratures gland-cuspidate, both sides beset with a few short pellucid hairs, base slightly retuse, apex for the most part acute.—*Petioles* about three lines long, broadish. *Peduncles* filiform, as well as the calyx covered with much soft villosity; two very minute subulate bractes at their base, concealed within the axils. *Calyx* strongly ten-ribbed, the alternate ribs shorter; *laciniæ* linear, somewhat unequal.—*Corolla* purple; *tube* equalling the calyx; *limb* bilabiate: *upper-lip* bipartite, ascending, pubescent, *laciniæ* sub-falcate; *under-lip* larger, descending, with two parallel white stripes on the palate, *laciniæ* lanceolate. *Column* equalling the tube, ascending a little above its longitudinal fissure.

*Obs.* This is an elegant plant when in flower, differing from Roxburgh's trigona by its petioled, more rounded leaves, cylindric stem, and its pubescence. Lamarck's *L. Nummularia*, Encycl. bot. iii. 589, seems to come nearer my *begonifolia* than to this species.

5. *L. pyramidalis*, Wall. in *Asiat. Res.* xiii. 376.

Smooth, with erect paniced ramous stem. *Leaves* lanceolate, tapering, acuminate, serrulate, *floral* ones linear. *Racemes* leafy, paniced. *Segments* of the *calyx* equalling the *corolla*.

This is one of the most common as well as ornamental plants in Nipal, where it grows both in low and elevated situations; I have found it from the entrance to that country at Bechiako, up to the mountains that bound the valley to the N. and where it grows at a

height of at least 8000 feet above the sea. It is also found in the hilly country near Silhet. It blossoms all the year round.

I have very little to add to the description I have given in the above-quoted work. The plant varies very much in height, and is often found altogether of a deep purple colour, but chiefly the floral branches and leaves. *Capsule* large, round, or ovate, generally nodding, slightly ribbed, crowned by the long linear calycine segments and often by the remaining tube of the corolla, two-celled. *Seeds* very minute, ferruginous.

6. *L. excelsa*, Leschenault.

*Leaves* oblong-lanceolar, acuminate, denticulate, attenuate at both ends, densely villous, short-petioled. *Raceme* terminal, erect, villous, columnar, most densely beset with flowers and foliaceous bractes. *Calycine lacinia* linear, as long as the tube.

Found on Neelgiri\* by my highly respected friend Mr. Leschenault de la Tour, who informs me that it is an annual plant growing to the height of ten to twelve feet, and called by the natives *Oumari*.

The specimen which my friend has indulged me with consists only of a couple of detached, probably lower or radical leaves, and a raceme of unopened flowers, which however indicate great beauty in the growing plant. The leaves are ten inches long, one inch and a third broad at the middle, and from thence tapering towards both ends, finely and copiously denticulated; exceedingly villous and soft underneath, reticulated, marked with an elevated rib and oblique approximated nerves, upper surface much smoother; they are very much like the leaves of some species of *Callicarpa*. *Petioles* short, marked by the decurrent base of the leaf.—*Raceme* full ten inches long, nearly three broad, all its parts villous. *Flowers* large, exceedingly numerous, and close together, peduncled, each supported by a sessile, lanceolate, or sublinear, finely acuminate serrulate bracte from an inch to an inch and a quarter long.—*Calycine lacinia* linear, denticulate, acute, equalling the tube.

\* The blue mountains. They are situated near Coimbatore.

7. *L. rosea*, Wall.

Covered with glaucous soft dense villosity. *Stem* panicked. *Leaves* lanceolar-ensiform, acuminate, finely denticulate. *Racemes* terminal with unilateral flowers. *Segments* of the *calyx* equalling the tube.

This very handsome species was found by my people at Noakote,\* in blossom in March.

A leafy, erect, annual plant, from four to six feet high, abundantly covered with greyish soft villosity, which gives the whole a glaucous appearance; as it grows old it becomes smoother on all its parts.—*Stem* about the thickness of a finger, tapering; *branches* simple, panicked.—*Leaves* very numerous, scattered, spreading, approximate, between ensiform and lanceolate, acuminate, tapering downwards, sub-sessile, finely denticulate, from eight to twelve inches long; the uppermost gradually smaller; floral ones linear-lanceolate, about an inch long, rather rounded at the base.—*Racemes* terminal, oblong, erect, leafy, about six inches long, forming a panicle.—*Flowers* numerous, unilateral, an inch long, nodding and almost pendulous, pubescent.—*Peduncles* adscending, half an inch long, supported by a foliaceous *bracte*.—*Calycine lacinia* linear, acute, equalling the tube.—*Corolla* like that of *L. pyramidalis* but larger, of a pale-rose colour, very villous within; *tube* whitish.—*Filaments* villous, distinct at the base. *Anthers* connected into a long purple incurved tube, which has a few hairs along the seams, and round the mouth.—*Ovarium* round, ovate, ten-nerved, bi- or tri-locular, villous.—*Stigma* pubescent.

8. *L. begonifolia*, Wall. l. c. 377.

Creeping, villous. *Leaves* short-petioled, round, cordate, dentate; with unequal base. *Peduncles* axillary, one-flowered, as long as the

\* This valley is about one days journey to the W. and S. of that of Nipal proper; it is far less elevated than that, and therefore much hotter in summer and milder in winter. Its vegetable productions strikingly correspond with those of the lower parts of that country.—N. W.

leaves, naked. *Calycine laciniae* linear, acuminate, toothed, a little longer than the tube.

This is a very common plant in the valley of the mountains of Nepal, delighting in shady moist places, near water-courses and springs. It blossoms and is in fruit nearly the whole year round; chiefly however, in the rains. It differs from the other species of this extensive genus in having a *fleshy* round *berry* of the size of a large pea, purple, smooth, two-celled, with numerous flattened brownish seeds attached to two thick septal placentæ.

*SPHENOCLEA. Gart. carp. i. 113. tab. 24.*

\* *Calyx* five-parted. *Corol* one-petalled. *Capsule* inferior, two-celled. *Seeds* numerous.

1. *S. zeylanica*, Willd. *Spec.* i. 927.

*Pongati*, Rheed. *Mal.* ii. 47. t. 24.

*Sphenoclea pongatium*, Lamarck.

*Gaertnera Pangati*, Retz. *Obs.* vi. p. 24.

*Beng.* Jeel mureech.

*Teling.* Neeroo-pipli.

An erect annual; a native of watery places. *Flowers* during the wet season.\*

*Root* fibrous, annual.—*Stem* erect, round, ramous, smooth, glossy, piped. *Branches* alternate, ascending.—*Leaves* alternate, short-petioled, lanceolar, entire, tender, smooth, from two to three inches long, and half an inch broad.—*Stipules* none.—*Spikes* terminal, or leaf-opposed, peduncled, cylindric, middle-sized, closely surrounded with the fructifications.—*Bractes* small, three-fold, one-flowered;

\* This plant which is very common over all parts of Hindoost'han is undoubtedly Loureiro's *Rapinia herbacea*, as has been proved by Mr. Dryander and Mr. Brown. See Rees's Cyclopedia, under *Rapinia* and *Sphenoclea*; and appendix to Tuckey's expedition, p. 483.—N. W.

one below, and one on each side, pressing the calyx.—*Flowers* small, white.—*Calyx* superior, one-leaved, five-cleft; *divisions* obtuse, spreading when the flower is open, afterwards converging over the capsule, permanent.—*Corol* one-petalled. *Tube* short; throat gibbous; *mouth* five-cleft, inflexed.—*Filaments* five, short, inserted into the mouth of the tube. *Anthers* two-lobed, lodged in the gibbous throat of the corol.—*Germ* inferior, angular. *Style* short. *Stigma* headed.—*Capsule* turbinate, angular, (from being pressed one against another,) two-celled, circumcised.—*Seeds* minute, very numerous, oblong.

### NAUCLEA Schreb. Gen. N. 295.

*Flowers* aggregate, on a globular receptacle. *Corollets* funnel-shaped. *Germs* inferior, two-celled, cells many-seeded, attachment interior. *Capsules* two-celled. *Seeds* many, imbricated, and winged. *Embryo* inverse, and furnished with a perisperm.

#### 1. *N. undulata*, R.

Arboreous, branches brachiate. *Leaves* petioled, ovate-oblong, waved. *Stipules* elliptic, length of the petioles. *Flowers* terminal, solitary. *Capsules* united.

A native of the Molluccas, from thence introduced into the botanic garden at Calcutta in 1789, where the trees blossom in May and June, the seeds take above a year to ripen.

*Trunk* perfectly straight to the top of the tree. *Branches* brachiate. *Bark* smooth, that of the ligneous parts brown, that of the tender parts green. Height of ten year old trees, from fifteen to twenty-five feet.—*Leaves* opposite, petioled, ovate-oblong and oblong, waved, entire, polished on both sides; from six to twelve inches long by from three to six broad.—*Petioles* coloured, slightly channelled, about two inches long.—*Stipules* elliptic, length of the petioles, smooth.—*Peduncles* terminal, solitary, drooping, each bearing a single, large globular, aggregate head of numerous, small, most beautiful, yellow, fra-



grant florets.—*Bracte*, a small, withering, somewhat four-toothed ring near the base of the peduncles, and hid by the stipules.—*Calyx*, common none, or very obscure; *proper*, of one, fleshy cup, cut into four or five, clavate segments.—*Corol* funnel-shaped, much longer than the perianth; yellow and fragrant; *divisions* of the border four, or five, oval, obtuse.—*Filaments* scarcely any. *Anthers* on the five fissures of the border of the corol.—*Germ*s inferior, grown together, two-celled, with many *ovula* in each, attached to their proper receptacles, projecting downwards from their attachment to the partition a little above its middle. *Style* much longer than the corol. *Stigma* large, oblong, with the apex somewhat two-lobed.—*Fruit* the size of a small apple, rough with the remains of the segments of the calyx, now forming five conic knobs, on the crown of each of the partial seed vessels, which are all firmly grown together, each of these are two-celled.—*Seeds* rarely more than one in each cell, and fragrant, not one of the whole being abortive, they are oblong, not winged but crowned with a fleshy gland which unites them to the receptacle on the partition. *Integuments* uncertain, from the smallness of the seed.—*Perisperm* conform to the seed.—*Embryo* inverse, nearly as long as the perisperm. *Cotyledons* oblong. *Radicle* oval, superior.

## 2. *N. cordata*, R.\*

*Leaves* petioled, broad-ovate-cordate, obtuse, coriaceous, smooth; *Stipules* obovate. *Flowers* terminal, solitary. *Capsules* united.

A native of Ceylon, reared from seed sent from thence in 1802, to the botanic garden at Calcutta by General Hay Macdowall, where the young trees blossomed in May and June, 1808, and the seeds ripened in the cold season.

*Trunk* straight up through the branches to the very top of the tree. *Bark* of a light greenish ash-colour. *Branches* spreading, horizontal, forming a broad-ovate, shady head, general height of our six

\* *N. coadunata*, Sir J. E. Smith in Rees Cycl. in loco; this work should be consulted on the genera *Nauclea*, *Uncaria* and *Cephalanthus*, which probably are one and the same.—N. W.

years old trees from fifteen, to twenty-feet.—*Leaves* opposite, short-petioled; from round-cordate to ovate-cordate, obtuse, entire, coriaceous, smooth; marked with prominent, alternate veins; the upper surface shining dark green, the under one paler; length from three to nine inches, and from two to eight broad.—*Petioles* roundish, smooth, about an inch or an inch and a half long.—*Stipules* interfoliateous large, roundish, or obovate, apex rounded, marked with numerous, fine veins, caducous.—*Peduncles* terminal, solitary, and generally in the small lateral branchlets, drooping, each supporting a large, beautiful, globular, aggregate head of very fragrant bright-yellow florets.—*Bracte* a small, irregularly four-toothed, withering ring round the peduncles, near the base, within the stipules.—*Calyx*, common none, or very obscure; *proper* deeply cut into four or five, fleshy, clavate, permanent segments, which thicken as the fruit advances in size.—*Florets* funnel-shaped, four or five-parted. *Divisions* obovate, obtuse.—*Filaments* very short, from the mouth of the tube just under the fissures of its border. *Anthers* cordate.—*Germ* inferior, completely united to each other, their whole length two-celled, each containing many imbricated seeds attached to a receptacle rising from the partition a little above its middle. *Style* much longer than the corol. *Stigma* oblong, apex obscurely two-lobed, of a beautiful pearl colour.—*Fruit* aggregate, size of a small apple, round, rough, with the obtuse, fleshy permanent portions of the divisions of the calyces; the partial seed vessels thereof are firmly united, angular, inversely conical, two-celled, with a few oblong, imbricated seeds in each, besides a number of small, brown scales, which are the abortive ovula, as may be seen by the structure of the germ as well as by their being attached to the same central receptacle; the full grown seeds are crowned with a greenish, fleshy gland, to which the umbilical cord is fixed. *Albumen* conform to the seed.—*Embryo* inverse, straight. *Cotyledons* oval. *Plumula* minute.—*Radicle* cylindric, superior.

3. *N. macrophylla*, R.

*Leaves* stem-clasping, narrow-oval, obtuse, villous underneath. *Stipules* lanceolate. *Peduncles* terminal, solitary, one-flowered.

From Amboyna this magnificent tree was introduced into the botanic garden at Calcutta, in 1797. In 1810, they began to blossom in June, the trees were then fifty feet high, and the trunk of the largest rather above three feet in circumference, four feet above ground, while young their growth was not rapid.\*

*Trunk* perfectly straight, like the pines, to the very top of the tree. *Bark* smooth, dark brown. *Branches* decussate. *Branchlets* round and smooth.—*Leaves* opposite, stem-clasping, broad-oblong, entire, obtuse, and though they completely embrace the branchlets, yet taper more toward the much waved base than the apex, somewhat villous particularly underneath, veins parallel; *length* from eight to twenty-four inches, and broad in proportion, when the trees were young, they were even more than two feet long.—*Stipules* opposite, linear-lanceolate, concave, smooth and veinless, about three inches long.—*Peduncles* terminal, solitary, length of the stipules, recurvate, giving support to a single most beautiful flower, of full three inches in diameter, and sweet smelling, the corollets are very numerous, of a pale yellow-colour; and the *stigmas*, which project far beyond them, are pure white.—*Common calyx* none; *proper perianth* of five, long, clavate leaflets.—*Corol* funnel-shaped. *Tube* slender, widening gently to the mouth; *segments* five, ovate-oblong, spreading.—*Filaments* none. *Anthers* attached to the mouth of the tube of the corol, under the fissures of its border, sagittate.—*Germ* numerous, distinct, inferior, somewhat wedge-shaped, two-celled, with numerous, imbricated *ovula* in each, attached to every part of a free linear receptacle, which is united to the partition, a little above its middle, and descends deep into each cell, in fact, it is exactly that of Gærtner's *Oldenlandia corymbosa*, i. 147. t. 30, inverted. *Style* twice the length of the corol. *Stigma* clavate, somewhat two-lobed.

\* The trunk of this noble tree measures now (April 1822), five feet two inches at the above-mentioned distance from the base.—N. W.

4. *N. Cadamba*, R.\*

Leaves petioled, ovate. *Stipules* triangular. *Peduncles* terminal, solitary; *divisions* of the calyx linear. *Capsules* four-celled at top and two-celled at the base; *seeds* without a wing.

Sung. नीपः, Neepa, प्रियकः, Priyuka, and कदम्बः, Kudumba.

Beng. Kudum

Katou-tsjaka, *Rheed. Mal. 3. t. 33.*

Is common about Calcutta, where it grows to be a large tree and is not only highly ornamental but very useful from the extensive close shade it yields. Flowering time the hot season. Seed ripe in October and November.

*Trunk* erect, and perfectly straight, bark smooth, dark grey. *Branches* numerous, horizontal.—*Leaves* opposite, between bifarious and decussate, spreading, petioled, oval, smooth, entire, nerves many, and simple; from five to ten inches long.—*Petioles* smooth, about an inch and a half long.—*Stipules* interfoliaceous, triangular.—*Flowers* solitary, terminal, aggregate; *corollets* numerous, forming a large, perfectly globular, beautiful, orange-coloured head with the large white clubbed stigmas projecting.—*Calyx*, common none. *Proper*, five-parted.—*Corol* as in the genus, only the divisions are never recurved.—*Capsules* inferior, four-sided, tapering from the apex to the base, near the top it is composed of four, distinct, hard cells, under the common envelope; the lower two-thirds is two-celled only.—*Seeds* numerous, very small, angular, brown colour.

5. *N. glabra*, R.

Leaves elliptic and smooth. *Stipules* linear.—*Peduncles* terminal, tern; *divisions* of the calyx triangular.—*Stigma* globose; *seeds* three or four in each cell.

A native of the Moluccas.

\* It is difficult to say whether this is Linneus's *N. orientalis* or not. If *Rheede's Katou Tsjaka* is this species, *Roxburgh's* must undoubtedly be so too. *Abbé Poiret* quotes the former for his *citrifolia*, (*Encycl. bot. iv. 435*); and *Lam. Ill. tab. 153. f. 1*, which is widely different, for *orientalis*.—*N. W.*

6. *N. parvifolia*, Willd. spec. i. 929. Roxb. Corom. i. 40. tab. 52.

*Branches* and *branchlets* brachiate. *Leaves* ovate. *Stipules* oval. *Flowers* terminal, one or three. *Seeds* imbricated, membrane-winged. *Teling.* Bota kudumee.

This grows to be a large tree; is a native of almost every part of the coast of Coromandel, but chiefly up amongst the mountains. Flowers during the cold season.

*Trunk* straight. *Bark* brownish-grey, and cracked. *Branches* opposite, numerous, spreading, forming a large oval, shady head.—*Leaves* opposite, decussate, petioled, ovate, entire, smooth.—*Petioles* channelled.—*Stipules* large, oblong, obtuse, glutinous, caducous.—*Peduncles* terminal, single or three, when three the middle one is shortest; near the apex jointed, and bracted, each supporting a single, globular, naked head of corollets.—*Bractes* two, opposite, near the extremity of the peduncle, oval, caducous.—*Corollets* small, light yellow.—*Calyx*, common none; common receptacle chaffy, wedge-form, hairy at their insertions. *Proper perianth* very minute, entire.—*Corol* one-petalled, funnel-form. *Tube* widening. *Border* five-parted; *divisions* pointed, spreading.—*Filaments* five, short, inserted just within the mouth of the tube. *Anthers* erect, oblong, pointed above.—*Germ* beneath. *Style* thread-form, nearly twice the length of the corol. *Stigma* large, resting on the style (like the cap of liberty).—*Capsules* turbinate, covered with a scabrous crust or bark, which splits irregularly when the seeds are ripe; within are the proper two-celled capsules, each consisting of one valve, opening round the apex and down on the inside.—*Seeds* several, very minute, oblong, tailed, inversely imbricated round the outside of their receptacle, with insertions downwards.

*Obs.* The wood is of a light chesnut colour, firm and close grained, is used for various purposes where it can be kept dry, but exposed to wet it soon rots.

7. *N. cordifolia*, Willd. spec. i. 929. Roxb. Corom. i. 40. tab. 53.\*

\* Specimens have been sent to me by my plant-collector from the vicinity of Shree-nugur, where the tree is called Totro.—N. W.

*Leaves* opposite, round-cordate, downy underneath. *Flowers* axillary, from one to three. *Segments* of the calyx clavate; *seeds* membrane-winged, not imbricated.

*Beng.* Keli-kudum.

*Teling.* Daduga.

This like the foregoing species, grows to be a very large tree; it is a native of the mountains of the coast of Coromandel. *Flowers* during the wet season. The seeds ripen about April.

*Trunk* tolerably straight. *Bark* like that of the former. *Branches* very numerous, horizontal, forming a very large, shady head.—*Leaves* opposite, decussate, petioled, broad-cordate, pointed, entire, above pretty smooth; downy underneath, particularly when young, beautifully reticulated with small veins; from four to twelve inches each way.—*Petioles* round, a little downy; from two to three inches long.—*Stipules*, as in the last species.—*Peduncles* axillary, from one to four, round, downy, length of the petioles, near the apex jointed, and bracted, each supporting a single globular head.—*Bractes* oval, caducous.—*Flowers* as in the former.—*Calyx*, common none. *Common receptacle* as in the preceding species. *Proper perianth* above, five-parted; *divisions* clavate.—*Corollets*, *stamens*, *germ*, and *style* as in the former species. *Stigma* clavate.—*Capsules* wedge-form, the other parts as in the foregoing species.—*Seeds* about six in each cell, surrounding their receptacle, oblong, not imbricated, membrane-winged at the extremities, the lower ones pointed, the upper two-forked.

*Obs.* The wood of this tree is exceedingly beautiful, its colour is like that of the *box-tree*, but much lighter, and at the same time very close grained. It is to be had of a large size, from one to two feet, or more in diameter, and is used for almost every purpose where it can be kept dry. For furniture it answers exceedingly well, being light and durable.

8. *N. purpurea*, Willd. spec. i. 929. Roxb. Corom. i. 41. tab. 54.\*

\* *Bancolus* (major et minor) Rumph. Amb. ill. 84. tab. 55. quoted by Willdenow for the species and by Lamarck for his *Cephalanthus chinensis*, Encycl. bot. i. 678, does not belong to this species.—N. W.

*Leaves* petioled, oblong, very smooth. *Flowers* terminal, from one to three, segments of the calyx clavate. *Seeds* very numerous, membrane-winged, imbricated.

*Teling.* Bagada.

A small tree, a native of the moist vallies up amongst the Circar mountains. Flowering time the beginning of the hot season.

*Trunk* irregular.—*Bark* scabrous, ash-coloured.—*Branches* opposite, decussated.—*Leaves* opposite, decussated, short-petioled, oblong, pointed, entire, very smooth and shining both above and below, from four to nine inches long, and broad in proportion.—*Stipules* as in the two preceding species.—*Peduncles* terminal, one or three.—*Flowers* larger than in either of the former species, purple.—*Calyx*, common none. *Receptacle* almost naked. *Proper perianth* as in *N. cordifolia*.—*Corol*, *stamens* and *pistillum* as in the former species. *Stigma* globular. *Capsules* turbinate, (the outer covering wanting,) two-celled; the cells two-valved, opening from the base.—*Seeds* numerous, most minute, imbricated with their insertion upwards.

9. *N. sessilifolia*, R.

*Leaves* oblong, sessile, base somewhat cordate, embracing the branchlets; apex rounded. *Flowers* terminal, solitary. *Capsule* four-valved.

A large tree, a native of the forests of Chittagong, where it blossoms from January till March.

10. *N. rotundifolia*, R.

*Leaves* petioled, round-oval, obtuse. *Stipules* oblong, obtuse, many-nerved. *Flowers* terminal, sub-paniced. *Capsules* distinct.

A middling sized tree, a native of Chittagong, where it blossoms in October, and the seeds ripen in March.

11. *N. ovalifolia*.

*Leaves* sessile, oval and elliptic. *Flowers* terminal, solitary.

A tree, a native of the forests of Silhet, where it is called *Shal* by the natives.

12. *N. tetrandra*, R.\*

*Leaves* ovate-lanceolate, acuminate, villous. *Flowers* terminal; *corollets* tetrandrous, a black gland between the four segments of the calyx and corollets.

*Beng.* Shwet Kudum (white kudum.)

An elegant small tree, a native of Silhet. Here it grows to the height of from ten to twenty feet, with a distinct, erect trunk. Flowering time the hot season.

*Branchlets* straight, round, very downy.—*Leaves* from opposite to quatern, short-petioled, ovate-lanceolate, entire, acuminate, downy underneath, from three to five inches long, and rarely so much as two broad.—*Stipules* within the leaves, acuminate.—*Inflorescence* terminal. *Flowers* peduncled, from three to a verticelled panicle.—*Perianth proper* four-toothed, with a little black gland between. *Corollets* funnel-shaped, yellow, intermixed with filiform, clavate scales; *border* four-parted, with a little black gland between, as in the calyx.—*Filaments* scarcely any. *Anthers* four, erect, attached to the mouth of the tube of the corollet.—*Germ* inferior, very minute, but clearly two-celled; only one *ovula* in each could be observed. *Style* longer than the corollets. *Stigma* headed.

UNCARIA. Schreb. Gen. N. 311.

*Flowers* aggregate, on a globular receptacle. *Calyx*, common simple, remote; *proper*, five-parted. *Corollets* funnel-shaped. *Germ* inferior, two-celled; *cells* many-seeded, attachment interior. *Capsules*

\* *N. tomentosa*, Willd. MS. fide Syst. veg. v. 221, seems to be this species. I have specimens collected at Silhet by Mr. Francis De Silva, successor to the late Mr. R. M. Smith, who informs me that the flowers are very fragrant, which is peculiarly the case with those of *N. Cadamba*—N. W.



pedicelled, two-celled partitions parallel. *Seeds* many, imbricated, membrane-winged. *Embryo* inverse, and furnished with a perisperm.

Our East India plants belonging to this genus are very permanent, ciriferous ramblers; with opposite, stipulate leaves. Flowers globular, terminal, or axillary, and for the most part the capsules pedicelled, and in that state like globular umbellets which (with the habit,) separates them from *Nauclea*.

1. *U. Gambier*, Hunter in *Linn. transact.* ix. 218, tab. 22.—*Fleming* in *Asiat. Res.* xi. 187.\*

*Leaves* ovate-lanceolate. *Peduncles* axillary, solitary. *Capsules* clavate, pedicelled.

*Funis uncatus angustifolius.* *Rump. amb.* 5. P. 63. t. 34. f. 2 and 3.

A stout, scandent shrub, a native of Pulo-Pinang, Sumatra, Malacca, &c.

*Leaves* opposite, short-petioled, from ovate-oblong, to ovate-lanceolate, entire, acute; *smooth* on both sides; about four inches long, and two broad.—*Stipules* oblong, uniting the upper margin of the base of the petioles, caducous.—*Tendrils* axillary, solitary, or in opposite pairs, simple, recurved, hooked.—*Peduncles* axillary, solitary, about the middle jointed and bracted, supporting a single globular head, of beautiful, green and pink, small aggregate corollets.—*Bractes*, about the middle of the peduncle, a three- or four-cleft annular perianth-like cup.—*Perianth*, common, no other than the just mentioned bracte; *proper* sericeous on the outside with a five-cleft border.—*Corollets*; *tube* filiform; *border* of five obtuse divisions, villous on the outside, and hairy in the centre of the inside.—*Filaments* short. *Anthers* large, on the mouth of the tube.—*Germ* beneath, turbinate, sub-sessile, sericeous. *Style* as long as the tube of the corol. *Stigma* clavate.—*Capsules* pedicelled, clavate, longitudinally grooved, crowned with the five-cleft permanent calyx, two-celled, two-valved.—*Seeds* numerous, imbricated, winged.

\* Rees's Cyclop. under *Nauclea*.—N. W.

*Obs.* Gambier is the Malay name of an extract, prepared from the leaves of this plant. And I believe one of the drugs, if not the only one, formerly called *Terra Japonica* in Europe. For the following account thereof I am indebted to Dr. Charles Campbell, of Bencoolen, who says:

"This material is called by the Malays *Gambier*. It is chewed by the natives mingled with *Betle* leaf and *areca* after the manner in which the *Cutch* is used on the continent of India.

"With some sweetness it has a more highly concentrated astringent principle than *Terra Japonica*. I am solicitous that a trial should also be made of its power in tanning.

"In regard to the natural history of the *Gambier* it is procured from a climber little known to the Botanic Garden.

"It is the *Funis uncatus*, or *Daun Gatta Gambier* of Rumphius. *Herb. Amboine*. vol. v. tab. 34. The variety from which it is chiefly made is that denominated by Rumphius the *Funis uncatus angustifolius*.

"The preparation is simple, the young shoot and leaves are shred and bruised in water for some hours, until a feculum is deposited; this, inspissated in the sun to the consistence of a paste, is thrown into moulds of a circular form, and in this state the *Gambier* is brought to market.

"Rumphius has fallen into an error in asserting that *Gambier* is not made from this plant, for in my journey to Cochin-China I had an opportunity of inspecting the whole process, having resided some days at a small village near the foot of the mountain, where the *Sultan of Moco* has established a colony for the purpose of carrying on the manufacture to a considerable extent.

"The price at which it can be procured from the Northern parts on this coast, I have ascertained to be nearly ten dollars per hundred weight, it can be supplied in any quantity desired, for the plant abounds in these districts, and the mode of eliciting the astringent matter is such as requires neither much attention nor labour."

So far Dr. Campbell. But in other parts to the Eastward of the

Bay of Bengal I learn that the process is carried on by boiling the leaves and young shoots; evaporating the decoction by fire and the heat of the sun. When sufficiently inspissated, it is spread out thin and cut into little square cakes and dried.

The same substance is mentioned by Marsden in his History of Sumatra, at p. 242-3, who refers for a particular detail of the cultivation of the plant and manufacture of the Gambier, to the 2d volume of the *Transactions of the Batavian Society*.

## 2. *U. ozalifolia*, R.

*Leaves* oval, entire, smooth. *Peduncles* axillary and terminal, compound. *Capsules* and *common receptacle* villous.

A native of the Island of Pulo-Pinang.

*Trunk* and *branches* woody, climbing to a great extent. *Bark* dark-brown.—*Leaves* opposite, petioled and obovate, pointed, smooth on both sides, entire; from three to six inches long.—*Petioles* short, recurved, channelled.—*Peduncles* axillary and terminal, expanding, bearing from one to three aggregate flowers.—*Pedicels* nearly as long as the peduncles, bracted and jointed at the middle.—*Bractes* sheathing, with the mouth from two- to six-cleft.—*Calyx*, common *perianth* none. *Receptacle* globular, villous. *Proper perianth* above, five-toothed.—*Corol*, aggregate, equal, globular. *Corollets* numerous, funnel-shaped; *tube* very long and slender; *border* of five obovate divisions.—*Filaments* scarcely any. *Anthers* affixed to the mouth of the tube.—*Germ* beneath. *Style* the length of the corol. *Stigma* clavate.—*Capsules* two-celled, villous.—*Seeds* numerous, minute, imbricated from the base of the receptacle.

## 3. *U. pedicellata*, R.

*Leaves* ovate-cordate. *Peduncles* axillary, solitary, undivided. *Corollets* long-pedicelled.

A native of the Molucca Islands.

## Addition by N. W.

I have specimens of a plant which may perhaps be this species. They were collected at Pinang by Mr. Jack and labelled *U. cirrhiflora*, Roxb. with a doubt. As Dr. Roxburgh has not furnished any detailed description, it is difficult to say to which of these two species they belong. From the last mentioned they differ in not being smooth; from *sclerophylla* in having acute, less rounded, soft leaves. They belong to an extensively climbing shrub. Branches quadrangular, while young covered with much rust-coloured tomentum, as are also the young leaves, peduncles, and flowers. Leaves leathery, ovate, acute or sub-acuminate, base rounded, entire or slightly retuse, about five inches long, upper surface polished and shining, under one villous and soft, with sub-opposite parallel approximate nerves, each having an axillary glandular hairy foveola, as indeed is very generally the case with the *Naucleas*; veins transverse, elegantly reticulate. Petioles short, villous. Stipules ovate, acute, bifid, villous, almost equalling the petioles, caducous. Tendrils axillary, opposite, villous, flattened, recurved and hooked, from one to two inches long. Peduncles axillary, horizontal, flattened at the base, three inches long, having a joint and two opposite bractes above the middle. Flowers very numerous, on long peduncles, densely covered with ferruginous tomentum, forming a round head of about an inch and a half in diameter. I have not seen the opened flowers.—N. W.

4. *U. cirrhiflora*, R.

Leaves ovate-oblong, smooth. Stipules bifid. Peduncles, a continuation of the recurved tendrils.

A native of the Malay Islands.

5. *U. acida*, Hunter.\*

\* Hunter, l. cit. 223. Sir J. E. Smith quotes fig. 1. of Rumphius's above mentioned plate for this species. *Cinchona* sp. Retz. obs. iv. 6.—*C. kattakombar*, Retz. jun. fide syst. veg. v. 141—N. W.

*Leaves* ovate, smooth. *Stipules* deeply two-cleft. *Flowers* solitary on the bracted apices of the tendrils.

Found by Dr. Hunter on Pulo-Pinang. The leaves Dr. H. observes are acid, hence the specific name.

6. *U. sclerophylla*, Hunter.\*

*Branches* four-sided, pubescent. *Leaves* elliptic, pointed, rigid. *Stipules* lunate, two-lobed. *Peduncles* axillary, solitary.

Found by Dr. Hunter on the Hills of Pulo-Pinang.

7. *U. sessilifructus*, R.

*Leaves* oblong, smooth above, soft underneath. *Peduncles* axillary, and from one to three-flowered; also terminal, and many-flowered. *Capsules* sessile.

A large scandent shrub, supported by strong, spiral, axillary hooks; a native of the forests of Chittagong. Flowering time the cool season.

8. *U. pilosa*, R.

All the tender parts very hairy. *Leaves* ovate-oblong, acuminate. *Stipules* two-parted. *Peduncles* axillary, one-flowered.

A stout scandent shrub; supported by strong, hairy, axillary, spiral hooks; a native of the forests of Chittagong, where it flowers in February and March.

*Addition by N. W.*

This is Sir J. E. Smith's *U. scandens*, Rees's Encycl. in loco; but his synonym of Rumphius, *Funis uncatus lanosus*, herb. amb. v. 63. tab. 34. f. 3, belongs probably to my *U. lanosa*, (see below.) I have found it in the forest at Sankoo in the valley of Nipal and at Bheempedi; blossoming in April and May.

A climbing shrub with numerous branches, all parts of which are clothed with dense, ferruginous, soft hairs; *young shoots* sericeous.

\* Hunter et Smith, ut supra.—N. W.

—*Stem* sub-cylindric, very obscurely quadrangular, with grayish bark, about an inch in diameter; the wood is remarkably porous like that of a ratan, the centre of it quadrangular, and filled with brownish fulgent pith.—*Branches* very long and slender, bluntly four-cornered, their upper ends four-furrowed. *Hooks* axillary, opposite, about two inches long, hairy, recurved, tapering from a very broad and flat base into a round apex which is crowned by a vestige of the bractes.—*Leaves* opposite, spreading, sub-bifarious, generally larger than their interstices, ovate, acuminate, sometimes sub-cordate, from five to seven inches long, very hairy on both sides, chiefly below, where they are marked with sub-opposite obliquely archad nerves and parallel reticulate veins; the upper surface roughish and somewhat rugose; *acumen* linear, two-thirds of an inch long.—*Petioles* very short, round, and hairy.—*Stipules* interpetiolar, deeply bipartite, almost diphyllous; *segments* lanceolate, acute, longer than the petioles, with recurved apex.—*Peduncles* axillary, opposite, divaricate, nearly three inches long, flat at the base, from thence tapering; at the exterior one third of their length they are jointed and bear a verticil of about six small linear-lanceolate bractes, which are three lines long, hairy without, smooth within; they fall off together with the apex of the peduncle, after which the remaining two-thirds become the above-mentioned recurved hooks.—*Flowers* very numerous, whitish, hairy; forming round dense heads of two inches in diameter.—*Laciniae* of the calyx linear, sub-clavate, obtuse, very hairy.—*Tube* of the *corolla* filiform, remarkably long. *Style* exerted, capillary. *Stigma* clavate.

### 9. *U. lanosa*, Wall.

Shrubby, scandent, clothed with long spreading hairs. *Leaves* lanceolate-ovate, acuminate, smoother above, short-petioled. *Stipules* ovate, membranous, two-leaved, recurved. *Peduncles* short, becoming hooks. *Corolla* almost smooth. *Capsules* on long pedicels.

A native of forests at Pinang; communicated by Mr. Jack, surgeon to Sir Stamford Raffles, the governor of Sumatra.

A climbing shrub; all the upper parts densely clothed with long spreading ferruginous, soft, shining hairs.—*Branches* opposite, spread-

ing, sub-quadrangular.—*Leaves* spreading, ovate-lanceolate, tapering into a linear, slender acumen, entire; base somewhat acute, from three to four inches long, on very short petiols, the underside very hairy, with the rib and oblique nerves much elevated, finely reticulate; upper surface smoother.—*Stipules* in opposite pairs, membranous, ovate, acute, hairy without, smooth within, rather longer than the petiols, recurved, persistent.—*Peduncles* axillary, opposite, about an inch long, hairy, compressed at the base; the verticil of bractes consisting of four lanceolate leaflets; after their apex has fallen off they become slender, rather short, recurved hooks. *Heads* about two inches in diameter.—*Calycine lacinia* linear, ciliate, hairy without. *Tube* of the corolla capillary, long, smooth; *lacinia* lanceolate, a little hairy.—*Capsule* long-pedicelled, smooth, ash-coloured, clavate-oblong, crowned, measuring about five lines in length; the external membrane thin, separating soon after maturity.—*Seeds* very small; *wings* unequal, the lower one smaller, bifid.

*Obs.* It comes very near to *U. scandens*, Smith: which as I have remarked above is the same as Roxburgh's *U. pilosa*. It differs in having longer and more distinct hairs; the leaves being narrower and rather shorter, acute and not rounded or retuse at the base; the stipules being broader, decidedly two-leaved, membranous; peduncles shorter; the corollæ almost smooth. It appears to be a slenderer shrub.

#### 10. *U. macrophylla*, Wall.

Shrubby, scandent. *Leaves* petioled, broad-ovate, acuminate, smooth and shining above, villous, strongly nerved, and reticulate underneath. *Heads* solitary, axillary, covered with grey tomentum.

I have received abundance of specimens with flowers and unripe capsules from Mr. Francis D'Silva, my plant-collector at Silhet, who tells me the shrub flowers in September.

*Beng. Luta-Kudum.*

A very large, ramous, scandent shrub. *Branches* four-sided, pubescent, with two opposite furrows. *Leaves* large, coriaceous, broad-ovate, short-acuminate, base rounded and entire, from six to seven

inches long, the upper surface smooth and shining, the under one villous, its vessels much elevated, the nerves parallel, sub-opposite, uniting by intra-marginal, arched anastomoses, veins very numerous, parallel, transversal, reticulate. *Petioles* about half an inch long, villous, flattish above. The *stipules* must be very deciduous, for there is nothing but the transversal traces of their insertion to be seen in my numerous specimens. *Peduncles* opposite, axillary, or terminal, about two inches long, covered with ferruginous villosity, flattish, standing straight out; about five lines under the apex they are jointed and surrounded with five or six lanceolate, spreading, villous *bractes*.—*Head* large and globular, consisting of numerous slender flowers, the outside of which is covered with ash-coloured dense pubescence. *Calycine lacinia* linear, almost hoary. *Tube* of the *corolla* very long and slender. Immature *capsules* clavate, thin, short-peduncled, densely covered with grey tomentum, crowned by the lengthened calycine lacinia.

*Obs.* This fine species comes very near to Roxburgh's *sessilifolia*, but differs in having decidedly petioled leaves. My specimens want the hooked appendages or thorns; but there can be no doubt that they exist in this as in all the other species.

### RONDELETIA. Schreb. Gen. N. 296.

*Calyx* five-toothed. *Corol* infundibuliform. *Germ* inferior, two-celled, cells many-seeded, attachment interior. *Stigma* two-cleft. *Capsule* two-celled, two-valved; *seeds* many.

#### 1. *R. paniculata*, R.

Arboreous. *Leaves* sub-sessile, oblong-ventricose, tapering at both ends, smooth. *Stipules* round, recurvate. *Panicles* terminal, sub-brachiate.

A native of the Malay Islands. It was brought from Amboyna by Captain Anderson, to the Botanic Garden at Calcutta, where it blossoms in March, April, May and June.



*Trunk* straight. *Branches* decussate. *Bark* smooth, brown on the older parts; on the younger green.—*Leaves* opposite, sub-sessile, oblong-ventricose, tapering at both ends, above smooth, underneath somewhat villous, entire, from four to ten inches long, and from two to four or five broad.—*Stipules* within the petioles, round-reniform, recurved, smooth.—*Panicles* terminal, and from the exterior axils; the former brachiate, the latter have the whole of their ramifications alternate; they are all round and villous.—*Flowers* minute, pure white, very numerous, sessile, or short-pedicelled, on the short, alternate, ultimate ramifications of the panicle.—*Bractes* of the ramifications large, and of various forms; those of the flowers, several, minute; all are villous.—*Calyx* villous; *segments* five, roundish.—*Corol*; *tube* perfectly cylindric; *border* of five, ovate, revolute segments, which are much shorter than the tube.—*Filaments* short, inserted into the bottom of the fissures at the border of the corol. *Anthers* ovate, incumbent.—*Germ* inferior, roundish, two-celled, each containing many ovula attached to an elevated receptacle on the centre of the partition. *Style* rather longer than the tube of the corol. *Stigma* of two, large, sub-rotund, spreading lobes.—*Capsules* minute, round, two-celled, two-valved, opening across the apex.—*Seeds* very minute, number, shape, &c. uncertain, as they scarcely ever come to their full size.

## 2. *R. tinctoria*, *R.*

Arboreous. *Leaves* petioled, oblong-lanceolar, smooth. *Stipules* triangular, cuspidate. *Panicles* terminal, decussate; *flowers* tern. *Beng.* Too'a-lodh.

A small tree, of about ten or twelve feet in height; a native of Burdwan and Midnapoor, in Bengal, where it blossoms in January and February; the seeds ripen in May.

*Trunk* straight, rather short, about as thick as a man's leg. *Bark* covered with a dark brown, slightly crooked, spongy lamina; inwardly fibrous, yellowish, and astringent. *Branchlets* opposite, *young shoots* four-sided, and densely clothed with short, ferruginous hairs.—*Leaves* opposite, rarely tern, petioled, from oblong to lanceo-

lar, entire, smooth above, a few hairs, particularly on the nerve and veins underneath : from four to six inches long, and from one to two and half broad.—*Petioles* short, and somewhat winged, arising from the decurrency of the leaves, hairy.—*Stipules* triangular, with ensiform apices, hairy on both sides.—*Panicles* terminal, large, composed of many, opposite, compound, four-sided, hairy branches and branchlets.—*Bractes* numerous, hairy ; those of the ultimate divisions of the panicle ensiform, with a hastate base, and embracing three flowers ; besides which each flower is furnished with a small proper bracte.—*Flowers* very numerous, small, white, sub-sessile, fascicled, and on the extremities of the ramifications, always in opposite fascicles of three.—*Calyx* five-toothed, hairy, permanent.—*Corol* one-petalled. *Tube* slender, many times longer than the calyx.—*Segments* ovate, spreading.—*Filaments* very short, inserted immediately under the fissures of the division of the border of the corol, in the mouth of the tube.—*Anthers* incumbent.—*Germ* inferior, turbinate, two-celled, each containing many *ovula* attached to the elevated centre of the partition.—*Style* as long as the tube. *Stigma* two-lobed ; *lobes* oblong.—*Capsule* spherical, size of a small grain of millet, dry, brown, crowned with the remaining calyx, two-celled, two-valved, opening across the apex contrary to the partition.—*Seeds* few, very minute, and imperfect, so much so that I have not been able to ascertain their internal structure.

*Obs.* Its bark is employed by the natives as a mordant in some of their dyes, hence the specific name.

### 3. *R. exserta*, R.\*

Arboreous. *Leaves* petioled, broad-lanceolar. *Stipules* semilun-

\* This is a rather common tree in various parts of Nipal, where it blossoms during the summer. It varies so much in the form and villosity of the leaves, and the more or less crowded fascicles of flowers, that I suspect at least two species are confounded under it, which I am unable at present to distinguish satisfactorily. The recurved, reniform, terminal appendix of the stipules is sometimes so large, as to give the petioles the appearance of being auriculate.—*R. orissensis*, Roth. fide syst. veg. v. 234, and probably also *R. Heynii* (*thyrsiflora*, Roth. MS.) *ibid.* belong to this species.—N. W.

nar, reflexed. *Panicles* terminal. *Corol* sub-campanulate. *Stamens* exsert. *Capsules* many-seeded.

A native of the interior parts of Bengal, and particularly over the ruins of the ancient city of Gour; Mr. Henry Creighton found it there, and sent plants to the Botanic Garden at Calcutta, where they thrive luxuriantly, and blossom in March, at which period they form one of its greatest ornaments.

*Trunk* erect. *Bark* ash-coloured. *Branches* opposite, spreading, or even drooping. *Branchlets* villous: height in ten years above twenty feet.—*Leaves* opposite, petioled, broad-lanceolar, entire, soft with down on both sides; general length from four to six inches.—*Petioles* short, flat on the upper side, downy.—*Stipules* semilunar, reflexed, downy.—*Panicles* terminal, very large, diffuse, ovate; *ramifications* round and downy.—*Bractes* sub-ensiform, varying much in size.—*Flowers* very numerous, small, pure white, fragrant.—*Calyx* small, five-toothed, hoary.—*Corol*. *Tube* short, and contracted at the mouth by five elevations on the inside; the five-oblong segments of the border recurved.—*Filaments* from the five ribs of the tube of the corol, nearly as long as the border. *Anthers* incumbent.—*Germ* beneath. *Stigma* large, two-cleft.—*Capsule* minute, villous, crowned with the withered *calyx*, two-celled, opening at the apex within the calyx.—*Seeds* many in each cell, small, rugose, attached to an elevated receptacle, which is attached to the middle of the partition.

#### 4 *R. tetrandra*, R.

Shrubby. *Leaves* lanceolate, sessile. *Stipules* pinnatifid. *Flowers* axillary, glomerate, tetrandrous. *Capsule* many-seeded.

A shrubby species; a native of Pulo-Pinang.

*Stem* straight; *branches* erect, smooth, four-sided, with the angles sharp on the young shoots.—*Leaves* opposite, sessile, lanceolate, smooth.—*Stipules* sub-pinnatifid, containing the inside of the base of the leaves, tapering to an awl'd point.—*Flowers* numerous, short-peduncled, crowded in the axills, and mixed with many, lanceolate,

ciliate bractes.—*Calyx*, corol, *stamens*, and *pistil* as in the genus.—*Capsule* small, black, angular.—*Seeds* numerous, immersed in the receptacles, as in a nidus.

5. *R. scandens*, R.

Shrubby, scandent, smooth. *Leaves* opposite, petioled, oblong, entire. *Panicles* axillary, small, brachiate. *Capsules* globular. *Seeds* numerous, small.

Found indigenous on the Island of Mauritius by Colonel Hardwick in flower and with ripe seed in June and July.

*Additions by N. W.*

6. *R. longifolia*, Wall.

*Leaves* elliptic oblong, acuminate, greatly tapering downwards, villous underneath. *Panicle* smooth, trichotomous. *Flowers* ternate, with glandular calyces.

Native of Silhet, blossoming in the rains, and first communicated to me by the late Mr. R. M. Smith. I have also found it in Nipal on Chanda-giri, Nag-Urjoon, at the foot of Sheopore near Thoka, blossoming from February till June. The Fruit ripens in the rainy season.

*Beng. Soorari.*

A small spreading shrub, sparingly branched.—*Branches* rounded, hollow and pithy, covered with a smooth, shining, white, soft epidermis, which gradually separates and at length falls off, leaving the woody part naked; young branches alternately compressed, villous.—*Leaves* approximate, very spreading, oblong-elliptic, tapering into a very slender, long acumen, much attenuate downwards, from six to fourteen inches long, thin and membranous, with margins slightly unequal, sub-repand, beset with adpressed short hairs, dark green above, villous and soft underneath, marked there with numerous sub-opposite, oblique, parallel nerves, and with capillary reticulate veins.—*Petiol* from one to three inches long, slender, margined from the decurrent base of the leaf, hairy.—*Stipules* interpetiolar, withering, erect, lan-

ceolate, acute, often bidentate, furnished within their broad base with a series of subulate glands.—*Panicle* terminal, broad, open and spreading, sessile or elevated on a very short peduncle, many times trichotomous, from two to five inches high, pubescent. At the base of it there are generally one or two pairs of lanceolate, or linear, sub-sessile floral leaves, one or two inches long.—*Peduncles* filiform, divaricate, supported at each division by a pair of fleshy, opposite, lanceolate, villous *bracts*, having an entire or three-lobed base; their margins marked with yellow subulate fleshy glands; those at the ends of the ramifications very small, deeply divided into glandular laciniae; sometimes there is a minute pair of opposite bracts between their bases.—*Flowers* large, yellow, scentless, fleshy, on capillary, rather longish peduncles, geminate or ternate *Aestivation* valvate.—*Calyx* slightly pubescent; *laciniae* lanceolate, acute, with a globular, yellow gland on each margin, sometimes at the apex also; *interstices* glandular.—*Tube* of the *corolla* cylindric, broad, four times longer than the calyx, pubescent without, densely villous within, a little widening towards the naked throat; *laciniae* spreading, ovate, acute, small, their apex slightly cuspidate.—*Stamens* inserted at the base of the tube; *filaments* very short; *anthers* oblong, not elevated beyond the height of the calycine laciniae. *Ovarium* nearly round, as large as a coriander seed, two celled; *ovula* numerous, inserted on two fleshy septal *placentae*.—*Stigma* oblong, fleshy, pubescent, scarcely elevated above the faux, equalling the filiform *style* in length; *lobes* linear, erect, with recurved margins.—*Capsule* round, as large as a pepper-corn, greyish, smooth, marked with two opposite, slight furrows, bursting at the apex, within the persistent recurved laciniae of the calyx, with a sub-orbicular, obscurely two-valved hiatus. *Seeds* numerous, minute.

*Obs.* I thought at first that the Silhet shrub differed from the Nipal one by its much longer and altogether larger leaves and more ample supra-decompound inflorescence; but on comparing my specimens from both countries I find they cannot with any propriety be separated. Indeed most of the East Indian species of this genus vary considerably in the figure and size of the leaves, the degree of their

pubescence and in their inflorescence; a circumstance which renders their specific discrimination difficult. I have observed a singular deviation in the situation of the stamina in some of the plants of the present species at Nipal; they are sometimes inserted below the throat of the corolla, which is in that case unusually ventricose and hairy, sometimes the apices of the antheræ are a little exerted; in both these cases the pistilum is remarkably short. In a few instances the calycine laciniae were without any glands.

7. *R. spicata*, Wall.

*Leaves* elliptic, acuminate, much attenuate downwards, villous, as is also the ramous *panicle*. *Flowers* tetrandrous, disposed in unilateral geminate spikes. *Calyx* eglandular.

A native of Penang, where it was found by Mr. Jack in 1819.

Probably a small tree. *Branches* slender, slightly compressed, together with the leaves and inflorescence densely covered with soft short villosity.—*Leaves* spreading, approximate, especially towards the extremity of the branches, elliptic, sub-obovate, acuminate, tapering extremely much from the outer third to the base, where they are very narrow and decurrent on the petiol, from six to twelve inches long, thin and membranous, somewhat rough above, with short hairs, densely villous underneath, with numerous, parallel, sub-horizontal nerves; the young ones, as also the young branches, tomentose and silky.—*Petiol* half an inch long, marginate, gradually widening into the base of the leaf.—*Stipules* membranous, withering, oblong, sub-connate, acute, smooth, except the elevated dorsal rib which is villous.—*Panicle* large, terminal, sub-sessile, with opposite, very spreading, remote, compressed, sub-decussate, densely villous *peduncles*; the secondary divisions of the peduncles dichotomous, terminating in cylindric, slender, geminate, sometimes ternate *spikes*, of about the thickness of a goose quill, two inches long.—*Bractes* under each sub-division of the panicle lanceolate, sub-hastate, acute.—*Flowers* densely approximate, small, disposed in a single series along one side of the rachis, unilateral, sub-sessile; a lanceolate acute bractlet under each.—*Calyx* villous, four-toothed; *teeth* subulate, one

generally shorter than the rest.—*Corolla* four times longer than the calycine laciniae, pubescent; *tube* a little widening at the apex.—*Laciniae* four, spreading, ovate, acute, villous above. *Faure* naked.—*Stamina* four, inserted under the apex of the tube; *anthers* linear, slightly elevated above the throat. *Ovarium* ovate, very small, villous, its vertex elevated within the calycine laciniae, and forming a glandular disc round the base of the style.—*Style* capillary, longer than the tube.—*Stigma* two-lobed, linear, lobes recurved.—*Capsule* small, round, villous, crowned, two-celled, bipartible almost to the base; its epidermis separating, leaving the inner chartaceous membrane naked and smooth. Each half, into which the capsule divides, is two-valved on the inner flattish side towards the apex. *Placentae* rounded, foveolate, at first attached to each side of the dissepiment, becoming free at the separation of the cells.—*Seeds* numerous, minute, cuneate, angular, naked, brown.

*Obs.* The habit and character of the flowers of this fine plant are so much like those of our asiatic *Rondeletia* that I have not ventured to remove it from that genus. The reduction in the number of stamens and laciniae of the flowers, and the bipartible capsule will hardly admit of any generic distinction; the naked *saux* it has in common with all the other species which I have examined. Its inflorescence is like that of a *Tournefortia*. *Bellardia* of Schreber, and *Tontanea* of Aublet, which are probably one and the same, come very near this shrub in flower and fruit.

#### 8. *R. pendula*, Wall.

*Branches* pendulous. *Leaves* lanceolate, ovate, acuminate, a little rough underneath, smooth above. *Corymbs* terminal, oblong, panicled. *Tube* of the corolla filiform.

I have found this exceedingly elegant shrub between Hetaunra and Bheempedi, in flower in December; also on Sheepore in January.

A branchy shrub, from five to six feet high. *Branches* opposite, long, slender and pendulous, obscurely quadrangular, brown, with smoothish separable epidermis; new shoots pubescent. *Leaves*

opposite, in luxuriant shoots ternate, ovate-lanceolate, tapering and acuminate, somewhat acute at the base, sub-sessile, from three to five inches long, exceeding their interstices in length, smooth, and shining above, somewhat rough underneath from a number of short subulate hairs which are scattered along the principal ramifications of the vessels, nerves alternate, very oblique, uniting by distinct intramarginal arches, elevated as well as the rib.—*Petiol* scarcely two lines long, covered with short hairs.—*Stipules* lanceolate, acute, adpressed, deciduous, rather shorter than the petiols.—*Corymbs* cylindric-oblong, short-peduncled, obtuse, from four to six inches long, terminal and axillary in the uppermost axils, forming a terminal, compound panicle, consisting of numerous, sub-opposite, pedicelled fascicles of very slender, green, fragrant, sub-sessile, five-cleft flowers. *Peduncles* villous. *Bractes* linear. *Calycine lacinia* very small, smooth, linear, erect, without any glands. *Tube* of the corolla filiform, eight lines long, smooth without, pubescent within, especially at its somewhat dilated apex and base. *Lacinia* ovate, short, smooth, acute, recurved. *Filaments* exceedingly short, inserted immediately below the interstices of the lacinia; *anthers* spreading over the limb of the corolla, linear. *Ovarium* ovate, smooth, two celled, many-seeded. *Style* capillary, longer than the tube. *Stigma* fleshy, clavate, entire.

#### 9. *R. cinerea*, Wall.

Arboreous; the upper parts covered with ash-coloured, dense tomentum. *Leaves* lanceolate, villous above, tomentose underneath. *Stipules* with a recurved, reniform apex. *Panicles* supra-decompound, with densely fascicled flowers. *Corolla* with a very short tube.

I have found it at Bunipa in the valley of Nipal and at Bheempedi; it has also been brought to me from Noakote; blossoming in the hot season; the fruit ripens during the rains. It has likewise been sent to me from Shree-nugur.

Newar name, *Goshina*.

A tree of about twelve feet in height, with a round stem, covered



with thick cinnamon-coloured bark, which cracks transversely. The wood is brownish, close-grained; it seems to be well suited for furniture. *Branches* quadrangular, with rounded corners, densely clothed with ash-grey, very soft tomentum, as are also the leaves and panicles; growing smoother by age.—*Leaves* lanceolate, tapering, sub-acuminate, the base acute; from four to six inches long, smoother above; underneath glaucous from copious tomentum, with elevated rib and parallel oblique nerves.—*Petioles* from one to two inches long, round.—*Stipules* large, oblong, the lower half adpressed, the upper recurved, foliaceous, reniform, emarginate, deciduous.—*Panicle* ovate, very large, terminal, supra-decompound, with divaricate ramifications, tomentose, glaucous.—*Bractes* oblong, caducous, sometimes lobed or sub-hastate at the base; the lowermost very long, linear.—*Flowers* small, white, fragrant, sub-sessile, densely fascicled, forming oblong, opposite racemes which are from one to two inches long.—*Calycine* laciniae very small, triangular.—*Tube* of the *corolla* smooth, very short; *limb* divided into five lanceolate, spreading laciniae; *throat* with five minute tubercles.—*Anthers* exerted above the throat.—*Capsule* very small, globular, villous, with numerous minute seeds.

#### 10. *R. coriacea*, Wall.

Arboreous, smooth on all parts. *Leaves* oblong-lanceolate, acuminate, tapering at the base, much longer than the interstices, coriaceous, lucid. *Stipules* adpressed, with ligulate vertical apex. *Panicle* terminal, dense. *Flowers* opposite very numerous.

A native of the valley of Nipal, where it is common in the forest at Toka and other places. I have also had it from Noakote. Flowering time the months of March and May.

Parbuteeya\* name, Kongeea.

Newar, Julsi.

\* This word however universally applied by the Nepalese to the people who inhabit the higher mountains, should probably be either Bhotæ or Nipal. It means simply the language of mountaineers, and is equally applicable to all the inhabitants of Nipal, and of all other mountains in the world. Ed.

A tree of about ten or twelve feet in height, with a straight stem, measuring from five to eight inches in diameter. *Bark* spongy, brown; *wood* light, very fine-grained, becoming brown on exposure. *Branches* issuing almost from the base of the stem, numerous, spreading, together with the other parts perfectly smooth, the uppermost somewhat quadrangular.—*Leaves* spreading, sub-decussate, one or two inches distant from each other, from five to seven inches long, acuminate, tapering at both ends, of a firm and leathery texture, polished and shining on the upper surface, less so underneath, where they are marked with very fine nerves.—*Petiols* about an inch long, slightly margined.—*Stipules* broad and short, rounded, ending in a ligulate acute lamina, which is turned in an opposite direction, in such a manner, that one of the margins is parallel with the branch.—*Panicle* terminal, pyramidal, sessile, perfectly smooth, consisting of numerous, opposite, decussate, decomposed, approximate ramifications; sometimes with one or two leaves above the base. *Bractes* lanceolate, coriaceous, acute; those on the common peduncles sometimes half an inch long.—*Flowers* white, fragrant, opposite, much crowded, on very short pedicels, each having a capillary bracte at the base.—*Calyx* small, with subulate *lacinia*. *Corolla* with a cylindric tube, five lines long; *lacinia* spreading, ovate, acute, marked with parallel sub-glandular veins. *Filaments* inserted under the throat; *anthers* elevated above the limb, spreading with the *lacinia*. *Stigma* clavate, two-lobed.

*Obs.* The inhabitants of Nipal use the wood for various purposes, such as rafters, tools, &c.; indeed it appears to me well worthy of being employed for furniture, being close-grained, and becoming soon after it is cut of a brownish colour, not unlike mahogany. A red dye is likewise prepared from it. The leaves and flowers attain sometimes a bluish colour on being dried.—*R. tinctoria* differs in having pubescent leaves, branches and panicles; whereas this species is perfectly smooth.

**MACROCNUM. Schreb. Gen. N. 297.**

*Calyx* five-toothed. *Corol* campanulate. *Capsule* inferior, two-celled, two-valved. *Seeds* imbricated.

1. *M. stipulaceum, R.*

*Leaves* sub-sessile, lanceolate, smooth. *Stipules* oval, very large. *Corymbs* terminal, supra-decompound.

A native of the Moluccas. The mouth of the bell of the short corol, is uncommonly woolly, nearly hiding the stamina.

2. *M. parviflorum, R.*

Shrubby. *Leaves* short-petioled, lanceolate, entire, smooth. *Stipules* annular, truncate. *Peduncles* axillary, many-flowered. *Corol* acetabuliform.

A native of the Moluccas.

*Obs.* I have seen only dried specimens of these two species.

**RANDIA. Schreb. Gen. N. 275.**

*Calyx* four or five-parted. *Corol* one petalled, four or five-parted. *Germ* inferior, two-celled, cell many-seeded, imbricated, attachment inferior. *Berry* two-celled. *Seeds* several, sub-imbricated. *Embryo* inverse, furnished with a perisperm.

1. *R. racemosa, R.*

Shrubby, erect. *Branches* decussate. *Leaves* oblong, smooth. *Racemes* axillary. *Flowers* tetrandrous.

*Beng. Peetunga.*

This plant was first discovered by Dr. F. Buchanan, growing about Lukshmee-poorā; from thence he sent the seeds to the Botanic Garden at Calcutta, where the plant is now common, and blossoms about the close of the rainy season.

*Stem* straight. *Bark* smooth. *Branches* opposite, expanding, indeed almost horizontal. *Bark* of the woody parts dark-brown, of the young shoots green, and smooth.—*Leaves* opposite, drooping, short-petioled, broad-lanceolate, entire, smooth on both sides, from three to four inches long, and about one broad.—*Stipules* within the leaves, large, tapering, caducous.—*Spikes* axillary, for the most part solitary, sub-sessile, about one-half or one-third the length of the leaves.—*Flowers* sessile, numerous, small, pale greenish white.—*Bractes* one-flowered.—*Calyx* four-toothed, permanent.—*Corol* funnel-shaped; *border* four-parted; *mouth* of the tube villous.—*Filaments* short. *Anthers* linear, half hid in the tube of the corol. *Stigma* bifid.—*Germ* inferior, two-celled, with several *ovula* in each, attached to the thickened centre of the partition.—*Berry* round, smooth, shining, straw-coloured, size of a pea, two-celled.—*Seeds* two, three, or four in each cell, attached to the upper half of the partition; shape very various. *Integument* fibrous.—*Perisperm* cartilaginous.—*Embryo* inverse, half the length of the perisperm. *Cotyledons* linear.—*Radicle* oblong, superior.

## 2. *R. stricta*, R.\*

Shrubby, straight. *Leaves* opposite, oblong, pointed. *Flowers* axillary, sessile.

A native of the mountains north of Bengal. In the Botanic Garden its flowering time is the cold season.

*Stems* several, straight, ornamented with numerous, cross-armed, spreading branches, down to the root; *height* of the whole from five to ten feet.—*Leaves* opposite, very short-petioled, spreading, oblong, or broad-lanceolate, pointed, margins entire, but wav-

\* This species is very common in all parts of Nipal, blossoming and fruiting from the months of April to November. I have specimens from Silhet under the Bengalee name of *Bunmalee*; they seem to differ only in having broader and on the whole larger leaves, which in the Nipal shrubs are narrow-lanceolate.—*Macrocnemum strictum*, Roxb. fide Cycl. Rees. in loco, et Syst. Veg. v. 6; and *Rondeletia stricta*, Roth. fide Syst. Veg. ibid. 234, are no doubt this plant. The synonymon of Pluckenet, Almag. 27, t. 132. f. 6. quoted in the last mentioned work, belongs probably to another genus.—N. W.

ed a little ; smooth on both sides.—*Stipules* connecting the petioles, on their inside, and tapering to a daggered point, pressing close upon the brancelet.—*Flowers* small, white, collected in dense, globular, sessile fascicles, in the axils of the leaves.—*Bractes* two or three, like the calyx, and embracing the base of the germ.—*Calyx* five-parted ; *divisions* acute, permanent.—*Corol* contorted, inside of the short tube hairy.—*Filaments* none. *Anthers* affixed a little below their apices within the tube, and in the fissures of the divisions of the border of the corol.—*Germ* inferior, two-celled, with several seeds in each. *Style* short.—*Stigma* large, oblong, hairy, two-cleft, but its lobes do not separate.—*Berry* globular, size of a pea, smooth, two-celled.—*Seeds* several in each cell, imbricated in two rows, attached to the partition above its middle. *Perisperm* conform to the seed. *Embryo* inverted.

### 3. *R. polysperma*, R.

Shrubby. *Leaves* oblong, entire, acuminate, smooth. *Stipules* subulate. *Spikes* panicled, axillary.

An elegant, very ramous shrub, a native of Chittagong. *Flowers* in May, and the seeds ripen in August and September.

## SCÆFOLA. Schreb. Gen. N. 900.

*Calyx* five-cleft. *Corol* one-petalled ; *tube* longitudinally cloven<sup>a</sup> on the underside, with unilateral five-cleft border. *Germ* two-celled, one-seeded, attachment inferior. *Drupe* inferior. *Nut* two-celled. *Embryo* erect, and furnished with a perisperm.

### 1. *S. Taccada*, R.

Shrubby, with smooth, succulent branches. *Leaves* sessile, obovate-cuneate, entire, shining. *Peduncles* axillary, solitary, two or three times dichotomous.

*Lobelia Taccada*, *Gart. fruct.* i. 119. t. 25.

*Buglossum littoreum*, *Rumph. amb.* iv. p. 116. t. 54.

*Bela modagam*, *Rheed. mal.* iv. 121. t. 59.\*

A native of most of the maritime parts of the East Indies, and introduced from Pulo-Penang into the Botanic Garden at Calcutta, where there is a constant succession of flowers and fruit the whole year round. I suspect the American plant, called by Willdenow and others, *Scævola Lobelia*, to differ specifically from ours; I have therefore preferred Gærtner's specific name.

*Trunk* short and variously bent. *Bark* thereof, and of the old branches ash-coloured, and somewhat scabrous, large branches erect, the smaller ones nearly verticelled, ascending, and covered with smooth, green bark; general height of the whole plant about five or six feet.—*Leaves* alternate, sub-sessile, long-obovate, with margins entire, apex circular, smooth, shining green on both sides; from three to six inches long. In the axil of each is found a little tuft of delicate white wool.—*Peduncles* axillary, solitary, once, twice, or thrice dichotomous, the whole not above one-fourth the length of the leaves.—*Pedicels* clavate, round, and smooth.—*Bractes* opposite, small, conical.—*Flowers* white, slightly fragrant.—*Calyx* may be called five-leaved; *leaflets* rather remote, erect, or recurved, subulate, permanent.—*Corol* one-petalled. *Tube* five or six times longer than the calyx, split its whole length on the side next to the branch, villous on the inside and shaggy with filaments round the mouth. *Border* of five, oblong, unilateral segments, with membranaceous, curled borders.—*Filaments* from the receptacle, erect till the flowers expands, then becoming variously curled back round the base of the tube of the corol.—*Anthers* oblong, crowned, before the expansion of the corol they adhere slightly to each other, round the mouth of the stigma.—*Germ* inferior, obovate, torose, two-celled, with one seed in each, attached to the very bottom of the partition. *Style* length of the tube, pretty thick, recurved. *Stigma* large,

\* It has been justly remarked by Mr. Aubert du Petit Thonars (Encycl. bot. suppl. t. 608.) that Rheede's *tree* seems to differ from Rumphius's *shrub*, both in size and place of growth. A similar observation has been made by Prof. Schultes in Syst. Veg. v. 163.—Rheede says it is "arbor speciosa atque præcelsa plurimum" which certainly is inapplicable to the shrubs from the shores of India; those at the Mauritius, if I remember right, never exceeding eight or at furthest ten feet.—N. W.

funnel shaped, very hairy on the outside, and ciliate.—*Drupe* nearly round, size of a small gooseberry, when ripe white, and torulose. *Nut* two-celled, dark brown, wrinkled; between it and the white exterior pulpy covering there is a white torulose, softish cartilaginous coat.—*Seed* one in each cell. *Embryo* lodged in a considerable portion of whitish *albumen*. *Cotyledons* two, oval. *Radicle* inferior, shorter than the lobes.

2. *S. oppositifolia*, R.

*Leaves* opposite, short-petioled, elliptic, entire, smooth. *Peduncles* axillary, few-flowered.

A native of the Moluccas; a slender shrubby species, very different in habit from *S. Königii*.

### CINCHONA. Schreb. Gen. N. 301.

*Calyx* five-toothed. *Corol* funnel-shaped. *Germ* inferior, two-celled, attachment interior. *Capsule* two-celled, with the partition parallel. *Seeds* many, imbricated, membrane-winged. *Embryo* erect, and furnished with a perisperm.

*Obs.* That part of the above character which makes the partition parallel does not agree with the only two East India species I have yet met with. In them the partition is contrary.

*Obs. by N. W.*

The trees alluded to in the preceding observation, form with two others a distinct genus, which I propose calling *Hymenodictyon*, and which may be thus characterised.

*Calyx* above, five-toothed. *Corolla* infundibuliform, with a five-parted limb. *Filaments* very short, smooth, inserted under the faux; *anthers* within the limb.—*Capsule* two-celled, two-valved, with a contrary ventral dissepiment. *Seeds* flat, imbricated on a septal placenta, which becomes free at length; surrounded by a reticulate wing (whence the name.)

In the Linnean system its place is *Pentandria Monogynia*, in the section with monopetalous superior flowers, and two-celled, two-valved capsules.

In the natural arrangement it belongs to the family of *Rubiaceæ*, 2d. division, 3d. section, (Juss. in Mem. du Mus. d'hist. nat. vi. 365. et seqq.)

The habit is that of lofty umbrageous trees, with opposite coriaceous leaves, large gland-ciliate stipules and compressed branchlets. *Flowers* small and inconspicuous, greenish, pubescent, crowded and fascicled in a terminal *panicle*, or in axillary or terminal, slender, simple or sparingly branched, peduncled *racemes*. Common peduncles bearing at the *apex* a lanceolate, arid, long-petioled, convex, veined, floral bracte.

The chief affinity of this genus is to *Macrocnemum*, *Mussaenda*, *Cinchona* and *Exostemma*. From the first of these it differs in having winged seeds and smooth stamina; from the next in the structure and consistency of its fruit; with both of them it has the singular floral leaf or bracte in common; but instead of originating, as it does in them, from the calyx itself, it proceeds from the apex of the common peduncle of the raceme. From the two last mentioned genera it is easily distinguished by its naked, not bipartible capsule, and the opposite dissepiment, which splits lengthways, along the axis, in two halves, each of which remains attached to the middle of its corresponding valve. The seeds are larger, and their wing bifid at the base; the flowers much smaller; in the form of the corolla; however, it comes nearest to *Cinchona*, in the exserted anthers to *Exostemma*.

1. *C. (Hymenodictyon, Wall.) excelsa, Roxb. corom. ii. 3. t. 106.*

Arboreous. *Leaves* oblong, downy. *Stipules* cordate, serrate. *Panicles* terminal and axillary. *Anthers* sub-sessile in the mouth of the tube. *Partition* of the capsule contrary.

*Teling.* Bundaroo.

This species of *Cinchona*, is a native of the mountainous parts of the Circars, and chiefly of the vallies, where it grows to be a



very large tree. Flowers during the rainy season. Seeds ripe in four or five months after.

*Trunk* straight, of considerable thickness and height. *Branches* numerous, spreading. *Bark* of the trunk pretty thick; the exterior lamina is grey, light, spongy; it cracks in various directions, and frequently falls off; the middle coat is brown, of a farinaceous nature, and is as thick as both the exterior and interior coats; the interior is white, (the fresh bark is here described.)—*Leaves* opposite, petioled, oblong, entire, soft, downy, particularly on the underside; *veins* simple, and frequently opposite; from six to twelve inches long, and from three to five broad. *Floral leaves*, the lower pair or two of the ramifications of the panicle are ornamented each with a pair of leaves, in shape like the rest, but much smaller, coloured, more permanent, and bullate.—*Petioles* round, downy, two or three inches long.—*Stipules* within the leaves, ovate-cordate, acutely serrate, erect, caducous.—*Panicles* terminal, large, generally with the lower ramifications, cross-armed.—*Flowers* fascicled, small, greenish-white, exceedingly numerous, exquisitely fragrant.—*Calyx* superior, five-toothed.—*Corol* one-petalled, funnel-formed, downy. *Tube* long. *Border* five-parted; *divisions* oval, spreading, not half the length of the tube.—*Filaments* five, short, inserted into the mouth of the tube. *Anthers* erect, one-third within the tube.—*Germ* oval. *Style* twice the length of the tube. *Stigma* headed.—*Capsule* oblong, crowned with the remains of the calyx, about as thick as a field bean, but twice as long, four-striated, marked with small white, elevated specks, two-celled, two-valved, opening from the top; *partition* contrary.—*Receptacle* slender, angular, length of the capsule, affixed lengthways to the suture of the partition.—*Seeds* from six to twelve in each cell; chesnut-coloured, imbricated, oblong, compressed, enlarged all round by a membranaceous jagged wing, which at the base is split up to the seed itself.

*Obs.* The infusion of one fresh leaf in water all night had little taste, but struck quickly a deep purplish blue with a chalybeate. The two inner coats of the bark (the outer light spongy stratum is

tasteless,) possess both the bitterness and astringency of *Peruvian bark*, and I think when fresh in a stronger degree; the bitterness is not so quickly communicated to the taste on chewing the bark, as that of the former, but is much more durable, and chiefly about the upper part of the fauces.

The wood is firm, close-grained, of a pale mahogany colour, and very useful for many purposes.

2. C. (*Hymenodictyon*, Wall.) *thyrsiflora*, R.\*

Arboreous. Leaves ovate, downy; floral coloured and reticulate. *Thyrse* terminal and axillary, drooping. *Stipules* oblong, fringed with coloured glands. *Border* of the corol urceolate. *Partition* of the capsule contrary.

A native of the interior parts of Bengal, where it was discovered by Dr. William Carey, and by him sent to this garden, where the trees blossom in June, and the seeds ripen in January.

*Trunk* straight, covered with smooth, ash-coloured bark. *Bran-ches* numerous, spreading, so as to form a large ovate head.—*Leaves* opposite, petioled, ovate, and ovate-cordate, downy; veins simple and parallel; length from two to eight or ten inches. The floral pair or two longer-petioled, somewhat scarious, smoother, and more permanent than the others. *Petioles* round, villous, about a third of the length of their leaves.—*Stipules* large, oblong, downy, and fringed with coloured glands round the margin.—*Thyrse* terminal, and from the exterior axils, from oblong to sub-cylindric, very dense, short-peduncled, drooping.—*Flowers* small, greenish-yellow, very fragrant, collected in numerous small fascicles, on very short, common peduncles.—*Bractes* linear-lanceolate, one to each fascicle, smaller ones to the proper pedicels.—*Calyx* about five-toothed, villous.—*Corol*; tube cylindric, more than twice the length of the calyx. *Border* five-parted, pitcher-shaped, length of the tube.—*Filaments* short, inserted into the mouth of the tube. *Anthers* sagittate, hid in the pitcher-

\* Syst. Veg. v. 14, where the species is pronounced intermediate between *Cinchona* and *Exostemma*.—N. W.

ed border.—*Germ* two-celled, *Style* twice the length of the corol. *Stigma* globular.—*Capsule* inferior, oblong, warty; size of a filbert, two-celled, two-valved, opening from the apex; *partition* contrary, and in this respect only does it differ from *Cinchona*. Is this a sufficient reason to remove it from that family? In *C. excelsa*, the partition is also contrary, receptacle placed longitudinally along the suture of the partition.—*Seeds* several in each cell, imbricated upwards, surrounded with a broad, brown, reticulated, membranaceous wing, which is cloven below up the umbilicus, at the base of the seed.—*Perisperm* thin, white, and fleshy.—*Embryo* erect, nearly as long as the perisperm. *Cotyledons* cordate.—*Radicle* oval, inferior.

### *Additions by N. W.*

#### 3. *Hymenodictyon flaccidum*, Wall.

*Leaves* ovate, elliptic, smooth and shining above; *stipules* oblong, spathulate. *Racemes* axillary, slender, pendulous. *Capsules* oblong.

I have found it on the Northern side of Sheopore towards its foot, in blossom, and with the empty capsules of the preceding year in June. It has also been brought to me from the valley of Noakote, with flowers in the same month.

A tree of moderate size covered with cinereous, pretty even bark. *Branches* spreading; the outermost di- or trichotomous, smooth, the younger shoots slightly compressed, having at the base some remaining gemmaceous, ovate, concave brownish scales.—*Leaves* very numerous and closely approximate at the end of the branches, spreading, ovate-elliptic, acuminate, attenuato-acute at the base, coriaceous, from six to ten inches long, margins slightly waved, upper surface smooth and shining, slightly sulcate along the nerves; the under one pallid and opaque, with an elevated rib, and oblique parallel, pubescent nerves, the axils of which are somewhat depressed and villous; veins minutely reticulate.—*Petiol* thick, round, an inch long, smooth or slightly pubescent; the upper end margined and with the base of the rib, reddish.—*Stipules* sub-petiolary, oblong, spathu-

late, obtuse, smooth, membranaceous, from half an inch to an inch long, withering and deciduous, ciliated with small subulate toothlets which soon become sphacelate; slightly contracted above the base, marked with capillary nerves; within the base as well as in the axils of the petioles there is a series of blackish subulate hairs.—*Racemes* flaccid and pendulous, from the outer end of the branches, solitary, axillary, about the length of the leaves, cylindric, slender, thickly covered with very small approximate, fascicled, ternate or quinate green, pubescent, scentless flowers. *Common peduncle* about two inches long, pubescent, bearing at the apex just under the flowers a petioled, lanceolate-oblong, acute, membranous, very spreading, pale but not otherwise discoloured, pubescent, slightly rugose, nerved and reticulate *floral leaflet*, three inches long, the upper surface convex, the under concave; its petiol smoothish, one-third shorter.—*Pedicels* very short, each with a minute linear bractlet.—*Calyx* linear, very short. *Tube* of the *corolla* twice as long as the calyx, slender, villous; *limb* campanulate, sub-plicate; *laciniæ* short, lanceolate, acute, united at the base by a peculiar sub-transparent membrane.—*Stamina* inserted under the throat, smooth; *filaments* very short; *anthers* within the campanulate limb, linear, erect, elevated a little above the mouth.—*Ovarium* ovate, pubescent, two-celled; *ovula* numerous, flat, lanceolate, marginate, densely imbricated on a fleshy septal *placenta*.—*Style* capillary, twice as long as the corolla, smooth.—*Stigma* clavate, fleshy, smooth, obtuse.—*Capsule* oblong-clavate, greyish brown, ten lines long, smooth, besprinkled with callous dots, bilocular, two-valved; *valves* septiferous.—*Seeds* not seen.

*Obs.* It comes near to the last species, which differs, however, in having broader, ovate, sub-cordate, downy leaves, and much thicker, both *terminal* and *axillary* sub-compound racemes; its capsules too are much broader, almost oval.

#### 4. *H. obovatum*, Wall.

*Leaves* obovate, acuminate, smooth. *Racemes* axillary and terminal, sub-ramous, erect.

Specimens are preserved in the late Dr. Heyne's herbarium without any name. Its native place is presumed to be Wynaad.

*Branches* ash-coloured, strongly knobbed with the vestiges of fallen leaves; green shoots much compressed, perfectly smooth.—*Leaves* opposite, spreading, very much crowded at the apex of the branches, broad-obovate, apex rounded, sometimes sub-retuse, with a lanceolate narrow acumen, base acute, perfectly smooth, the under surface beautifully reticulate, the axils of the nerves pubescent; four inches long.—*Petiols* round, naked, smooth, from two to three inches long.—*Stipules* ovate, acute, gland-ciliate, very deciduous.—*Racemes* very slender, cylindric, erect, long-peduncled, axillary at the end of the branches, and terminal, simple or with one or two sub-opposite branches, from five to six inches long.—*Peduncles* rather compressed, from one to two inches long; the cylindric, thickish *rachis* villous, greyish. At the apex of each peduncle there is a pallid, spreading, *floral leaf*, of a lanceolate, acuminate form, two inches long, convex and a little rugose above, glaucous, concave, beautifully veined and reticulate, slightly pubescent underneath, equalling in length its slender round glaucous footstalk.—*Flowers* very small, sessile, fascicled, approximate.—*Calycine* segments lanceolate, as well as the ovarium pubescent. *Corolla* covered with grey pubescence; *tube* short, *limb* sub-campanulate, with lanceolate, acute, laciniae.—*Ovarium* oblong supported by a subulate bractlet.—*Style* almost twice as long as the corolla. *Stigma* sub-capitate.

### 1. *Cinchona gratissima*, Wall.

*Leaves* ovate-oblong, acuminate, shining above, villous underneath. *Panicle* terminal, many-flowered. *Calyx* hoary, with very long, linear, deciduous *laciniae*. *Corolla* smooth, with a cylindric, long tube, and concave sub-rotund lobes.

A native of Nipal and Silhet. In the former country I have found it in great abundance on Nag-Urjoon, and some of the other smaller hills in the valley; also at Bechiako and Koolakan; it delights in exposed, rather naked situations, blossoming according to the

situations where it is found nearly the whole year round. In the latter country it is found on the *Pundooa* hills, blossoming in September.

Newar and Parbuteeya, Toongnusi.

Beng. *Usookooli*.

A branchy small tree, about sixteen feet in height, with a pretty even trunk, which grows to a diameter of six inches. *Bark* thin, brownish, uneven; wood close-grained, pale, almost white. *Branches* opposite, ash-coloured, dotted with callous small points; while young reddish, slightly pubescent.—*Leaves* opposite, spreading, approximate, ovate-oblong, acuminate, with acute base, margins ciliate, somewhat undulate, from four to six inches long, coriaceous, perfectly smooth, rather shining above, pale and opaque underneath, with elevated villous rib and parallel, approximate, oblique nerves; a tuft of hairs in the axils of the latter.—*Petiol* round, from an inch to an inch and half long, often reddish, with a few short hairs.—*Stipules* very deciduous, lanceolate, ending in a long channelled acumen, smooth, five lines long.—*Panicle* terminal, sessile, ovate, about as long as the uppermost leaves, with decussate ramifications, densely covered with white, soft hoariness. *Bractes* opposite under each division, and at the base of the pedicels, linear, long, very deciduous.—*Flowers* large and showy, of a beautiful pink or rose-colour, fragrant, ternate.—*Calyx* hoary, supported by a short, fleshy pedicel; *laciniæ* erect, linear, acute, rather narrower at the base, which appears to be jointed, caducous, measuring from six to eight lines, sometimes an inch long, somewhat unequal, frequently unequal-lateral, coloured and smooth within.—*Corolla* slender, twice as long as the calyx, smooth, fleshy; *tube* cylindric, somewhat widening towards the naked, pervious throat; *limb* spreading, about half the length of the tube; *laciniæ* sub-rotund, obtuse, crenulate, concave, sub-cordate at the base.—*Stamina* inserted under the entrance to the tube; *filaments* very short, anthers erect, lanceolate, not reaching above the throat.—*Ovarium* oblong-cuneate, hoary, fleshy, bilocular, ovula very densely applied to the septal, fleshy placenta. *Style* filiform. *Stigma* clavate, fleshy, bipartite; *lobes* lanceolate with sub-revolute

margins.—*Capsule* oblong-clavate, brownish, slightly villous, two-celled, about eight lines long, with truncate apex, bearing the vestige of the insertion of the calycine laciniae, somewhat compressed, with two opposite furrows, along which the two cells separate down to the acute base; *outer membrane* at first fleshy, afterwards coriaceous; *inner* chartaceous. *Dissepiment* parallel, consisting of the incurved sides of the inner membrane which meet along the axis of the capsule and are connected by the placenta until the time of maturity, when they separate and each detached cell becomes thereby longitudinally two-valved along its inner, flatter side. *Placenta* linear-oblong, foveolate, detaching itself entirely at the bursting of the cells.—*Seeds* very numerous, densely imbricate, adscending, small, brown, cuneate, scabrous and rugose, their vertex crowned with an irregularly crenulate short membrane.

*Obs.* It is impossible to conceive any thing more beautiful than this tree when covered with its numerous rounded panicles of pink coloured, very fragrant, large blossoms. I have been told that it grows sometimes to a much greater size than that mentioned above, which is the one I have observed it to attain. The ovary and the half-ripe capsule shew a peculiar structure, appearing four-celled, in consequence of the inner tough membrane continuing, after it has formed the dissepiment, to turn inward, penetrating almost through the fleshy placenta to the opposite side of the cell, which in consequence appears sub-divided.

### *HYMENOPOGON. Wall.*

*Calyx* above, five-parted. *Corolla* hypocrateriform, with very long tube, and five-parted border. *Stamina* enclosed within the swelled apex of the tube. *Capsule* bursting at the apex into four valves. *Seeds* imbricate, linear, with a membranous appendage at each end, whence the generic name.

Its place in the artificial, as well the natural system is the same as the preceding two genera *Cinchona* and *Hymenodictyon*, to

which it approaches on account of its large, leaf-like, floral bractes, and winged seeds. It seems much akin also to *Mussaenda*, *Oxyanthus*, De Cand. and *Tocoyena*, Aubl. but differs from them all by the singular dehiscence of the fruit and the linear, winged seeds.

1. *H. parasiticus*, Wall.

Grows parasitically on trees, sometimes on rocks on Sheopore, Chanda-giri, near Hetounra, and between that place and Chitlong. Time of blossoming the rains; the fruit ripens in the months of December and January.

A branchy small shrub, which is attached parasitically by means of fibrous roots. *Stem* about a finger thick, variously curved, rooting as well as the branches; the latter opposite, adscending, covered with pale ash-coloured bark. The young branches alternately compressed, villous.—*Leaves* opposite, spreading, very approximate, entire, acuminate, tapering downwards, from five to seven inches long, membranaceous, pubescent above, villous underneath, chiefly along the elevated rib and the opposite, numerous, oblique nerves; reticulate.—*Petiol* very short, rounded, widening into the sub-decurrent base of the leaf.—*Stipules* interpetiolar, adpressed, persistent, membranaceous, nearly as long as the petiols, ovate, acute, ciliate, the uppermost frequently lobed and sub-conname; within the base there is a series of fleshy ciliæ as in the family of *asclepiadeæ*.—*Corymbs* terminal or from the exterior axils, trichotomous, villous, sitting on slender peduncles, measuring two to three inches in length.—*Bractes* under each division, large, persistent, resembling the uppermost stipules.—*Flowers* very long, white, inodorous, mostly ternate, on thickish peduncles, which are about half an inch long; under most of these fascicles, from the point where their peduncles unite, there is a large spreading, very thin, membranous, persistent, foliaceous *bracte*, of an oblong-lanceolate form, acute, rather tapering at the base, pubescent on both sides, chiefly underneath, where it is elegantly nerved and reticulate, convex above, two or three inches long, elevated on a flattish pubescent petiol of about half its own length.—*Calyx* villous, divided into five,



linear, longish, persistent, sub-equal laciniae. *Corolla* hypocrateriform, pubescent; *tube* slender, cylindric, straight, two inches long, widening a little under the apex, the inside villous downwards.—*Limb* small, spreading, consisting of five, ovate, acute segments, measuring three lines in length, the upper surface towards the margins bearded with long white soft hairs. *Faux* very narrow.—*Stamina* inserted at the widening apex of the tube and enclosed within it. *Filaments* very short, sub-decurrent; *anthers* linear, erect.—*Ovarium* obovate, pubescent, with two opposite furrows, two-celled; *ovula* numerous, imbricated, subulate, attached by their centre to a parietal, sub-globular, fleshy placenta.—*Style* capillary, nearly as long as the tube, smooth, with two opposite furrows.—*Stigma* oblong, pubescent, immediately below the faux, two-lobed; lobes linear, diverging.—*Capsule* oblong, clavate, with convex sides, two-thirds of an inch long, pubescent, marked with ten elevated capillary ribs, crowned with the persistent calycine laciniae, and elevated considerably within them in the shape of a cone, which bursts into two sub-erect valves, each of which splits again down to the base in two-lanceolate, acute lobes, which gives it the appearance of being four-valved; two-celled, many seeded.—*Dissepiment* very thin, entire, persistent, its apex at length free. *Placenta* linear and very narrow, attached longitudinally to each side of the dissepiment.—*Seeds* numerous, linear, densely imbricated, smooth, terminated at each extremity by a long, linear, membranous, sometimes bifid appendage, measuring altogether three lines in length.

### *PSATHURA. Juss.*

*Calyx* superior, from four to six-toothed. *Corol* one-petalled; *tube* short, and hairy within; *border* from four to six-parted. *Germ* five-celled; *cells* one-seeded, attachment inferior. *Drupe* inferior, from four to six-celled. Nuts solitary, one-seeded. *Embryo* erect, and furnished with an ample perisperm.

1. *P. borbonica*, Willd. Spec. ii. 229.

Found indigenous on the Mauritius by Colonel Hardwick in flower and seed in the months of August and September; growing to the size of a small tree, with dichotomous branchlets; opposite, short-petioled, entire, smooth, oblong leaves; small axillary and terminal trichotomous corymbs of minute pentandrous flowers. Germ five-celled, with one ovulum in each, attached to the bottom of its cell. Style short. Stigma two-lobed. Drupe, the size of a pea, containing as far as five, nuciform, rugose seeds or nuts, each in its proper cell.

*DENTELLA*. Schreb. Gen. N. 310.

*Calyx* five-parted. *Corol* infundibuliform; *segments* three-toothed. *Capsule* inferior, two-celled, many-seeded.

1. *D. repens*, Willd. Spec. i. 972.

*Crusta* ollæ. Caranasci. Rumph. Amb. v. 460. t. 170. f. 4.

*Oldenlandia repens*. Burm. ind. 38. t. 15. f. 2.

A native of cool moist places, such as the shady banks of rivers, and water-courses

*Root* long, rarely perennial.—*Stems* many, creeping, jointed.—*Leaves* opposite, short-petioled, oval, ciliate.—*Flowers* in the divisions of the branches, sub-sessile, small, white.—*Calyx* five-parted; *divisions* lanceolate.—*Corol* five-cleft; *segments* linear, three-toothed.—*Stamens* five.—*Style* two-cleft near the bottom.—*Capsule* hispid; *receptacles* reniform, free, affixed to the middle of the partition.

*Obs.* Burman's figure of this plant is bad.

*PSYCHOTRIA*. Schreb. Gen. N. 313.

*Calyx* five-toothed. *Corol* tubular. *Berry* inferior, two-celled. *Seeds* solitary, grooved on the interior side.

1. *P. asiatica*, Willd. Spec. i. 961.

Shrubby. Branches opposite, smooth. Leaves ovate-lanceolate, entire, acute, smooth. Stipules semilunate: Panicles terminal, bractiate, crowded. Anthers linear. Berries oval, ten-ribbed.

A native of the Molucca Islands.

### *Addition by N. W.*

I received specimens of this species from Silhet in 1815. It grows on hills; blossoms during the rains, and ripens its fruit in the cold season. In Nipal I have only found it once on my way from Hetounra to Bheempedi, growing among rocks, in fruit in December.

Beng. *Maisa-alada*; and *Alada choonari*.\*

Shrubby. Branches smooth, round; upper ends pubescent, complanate.—Leaves opposite, spreading, rather thin and membranous, elliptic, tapering at both ends, acuminate, margins slightly crenulate outwardly, from eight to ten inches long, smooth and shining above, with copious, elevated, pubescent, parallel nerves underneath; the latter uniting on sub-marginal arches as in *Eugenia*; while young they are of a reddish tint, at least they appear so when dried.—Petioles round, about an inch long.—Stipules large, ovate, almost equaling the petioles, with a broad concave bark; apex somewhat recurved, and divided into two-lanceolate, acute lobes; within the base they are hoary.—Panicle terminal, roundish, rather small, short-peduncled; peduncles pubescent, flattish; common umbellate. Bractes small, lanceolate, under each division.—Flowers very small, subsessile, ternate, greenish.—Calycine lacinia linear, ciliate, half the length of the infundibuliform corolla, the inside of which is villous, and the border five-parted, acute.—Stamina concealed within the villous throat and scarcely elevated above it.—Ovarium oblong, pubescent. Style short. Stigma linear, two-lobed.—Berry oblong, dark red, shining, with a few short hairs, crowned, ten-ribbed.—Perisperm divided by a longitudinal fissure which penetrates to its middle and there widens a little. In other respect Gærtner's des-

\* Choonari is also the name of *Ixora villosa*.—N. W.

cription and figure of this species (*Carp. i. 120. tab. 125.*) agrees perfectly.

*Obs.* There can hardly be any doubt of this being Linneus's plant. It agrees perfectly in regard to its fruit with Gærtner's; also with Browne's *Psychotrophum* 2, *Hist. of Jamaica* 160, t. 17, f. 2. (marked *Psychotria asiatica* ? on the plate.)

2. *P. herbacea*, Willd. *Spec. i. 967. Jacq. Amer. 66. t. 46.*

Herbaceous, creeping. *Leaves* round-cordate. *Stipules* semi-lunar. *Flowers* few, terminal on the little erect branchlets.

*Karimta kali*, *Rheed. mal. x. 41. t. 21.*

*Koodi munkooni*, the vernacular name in Sîhet, where it grows in moist places under the shade of trees, &c. Flowering time the months of May and June.

#### *Addition by N. W.*

Berry almost round, smooth, even, crowned with the persistent calyx, of the size of a large currant. *Pulp* thick and fleshy. *Seeds* two, plano-convex, a little rugose, with a dorsal elevated line.—The rest as in *P. asiatica*.

#### 3. *P. sphærocarpa*, Walk:

*Leaves* ovate, elliptic, coriaceous, smooth. *Stipules* large, ovate, two-lobed, lobes acuminate. *Corymb* terminal, rounded, with crowded small flowers.—*Berries* sphaerical, smooth, even.

Native of the hills near Sîhet, from whence I received the fruit in 1815, and flowering specimens in 1821.

Native name the same as that of *Psych. asiatica*.

Shrubby. *Branches* round, thick, smooth, their upper extremities compressed.—*Leaves* broad-elliptic, acuminate, entire, acute, sometimes rounded at the base, from eight to twelve inches long, coriaceous, smooth, shining above, strongly marked underneath with approximate parallel nerves, which unite by sub-marginal veins.—*Petioles* an inch long, rounded.—*Stipules* as in *P. asiatica*.—*Corymb*

terminal, compact, sub-globular, peduncled, villous.—*Flowers* very small, sessile, densely crowded, appearing almost capitate. *Calyx* rather fleshy, with subulate teeth; *corolla* densely bearded at the throat; in other respects as in *asiatica*. *Berry* perfectly round and smooth, as large as a marrowfat pea, of a bright, pale red colour, without ribs, but obscurely marked with two opposite lines, its vertex not crowned, but only marked by a vestige of the calycine laciniae. *Dissepiment* very thin, almost membranous, being at length obliterated. *Seeds* two, hemisphæric, flat on one side, on the other convex and gibbous, without ribs or furrows.

*Obs.* The leaves and stipules are much like those of *P. asiatica*; the inflorescence is much more crowded than in that species, as are also the berries, which differ remarkably in their colour and form, as is apparent from the description given above. The fissure along the inner surface of the perisperm is deep and divides internally in two branches, resembling, after the fruit has been cut transversely, the letter T. In this respect both these species approach very closely to *Coffea*.

#### 4. *P. truncata*, Wall.

*Leaves* elliptic, ovate, acute, tapering at the base. *Stipules* large, ovate, entire. *Corymb* terminal, small, fleshy, with small bractes. *Calyx* truncate. *Corolla* infundibuliform, with a hairy throat.

Specimens without any name are preserved in Dr. Heyne's herbarium siccus, dated 20th March, 1817.

Shrubby? All the parts smooth, except the axils of the petiols which conceal a tuft of long white hair.—*Branches* round; the upper ends compressed.—*Leaves* coriaceous, broad, ovate, elliptic, acute, entire, base tapering, from six to eight inches long by four broad, becoming yellowish on being dried, perfectly smooth, with parallel, approximate, numerous nerves, whose axillae are foveolate.—*Petiol* about an inch long, sub-marginate.—*Stipules* large, ovate, acute, entire, coriaceous, deciduous, often longer than the petiols; their back depressed, concave, sub-triangular.—*Corymb* terminal, peduncled, about two-thirds shorter than the uppermost pair

of leaves; ramifications fleshy, rather short; a pair of small bractes under each division.—*Flowers* rather large, ternate, short-peduncled; the intermediate ones sessile.—*Calyx* cup-shaped, truncate, obscurely five-toothed.—*Corolla* funnel-shaped, four times longer than the calyx, with a five-parted lanceolate border.

### 5. *P. connata*, Wall.

*Leaves* lanceolate, acuminate, greatly tapering downwards, subsessile, smooth. *Stipules* ovate, acute.—*Corymbs* terminal, long-peduncled, trichotomous, with connate, infundibuliform, sub-lobate bractes. *Flowers* sessile, ternate. *Calyx* truncate. *Corolla* infundibuliform, with a bearded throat.

Specimens of this species are preserved in the late Dr. B. Heyne's herbarium, without any name, dated 26th July, 1818.

Shrubby? smooth on all its parts.—*Branches* round, the uppermost alternately compressed.—*Leaves* opposite, spreading, subapproximate, entire, lanceolate, acuminate, tapering much from above the middle downwards, coriaceous; nerves slender, subopposite, with foveolate axils.—*Stipules* ovate, cupidato-acute, slightly recurved at the apex, twice as long as the petiols, the uppermost broad-ovate, acuminate.—*Petiols* very short, scarcely exceeding two lines in length, channelled above.—*Corymbs* terminal, long-peduncled, ovate; the first ramifications umbelled, the rest trichotomous. *Peduncles* compressed, somewhat angular: *common* one slender, from three to four inches long; *partial* ones short; under each division there is a pair of opposite, large, ovate, acute, obscurely lobed, ciliate bractes, which are connate at the base, forming as it were concave ample involucels.—*Flowers* ternate, sessile.—*Calyx* urceolate, with an entire, obscurely five-toothed margin.—*Corolla* infundibuliform; *tube* thrice as long as the calyx; *laciniæ* of the border lanceolate; throat woolly.—*Stamina* nearly as long as the limb.—*Ovarium* small.—*Stigma* linear, two-lobed, under the throat of the corolla.—*Berry* ovate, almost black, crowned with the calyx, angular when dried, about five lines long, two-seeded. *Seeds* flat.

6. *P. stipulacea*, Wall.

*Leaves* oblong, lanceolate, acuminate, coriaceous, nerved, tapering much at the base, sub-sessile, smooth. *Stipules* large, with a foliaceous apex. *Panicle* terminal, trichotomous, much shorter than the leaves. *Corolla* with a bearded throat.

Native of Penang, from whence specimens were communicated by my excellent friend Mr. Jack, in 1819.

Shrubby? smooth on all its parts. *Leaves* much longer than their interstices, tapering from the middle downwards, very narrow at the base, from seven to ten inches long, including the very short petiole; nerves strong and elevated, their axils obscurely glandular.—*Stipules* adpressed, leathery, triangular, with concave back, enlarged upwards into a foliaceous, stem-clasping, undulate, ovate lamina; the whole measuring an inch in length; within the base there is a tuft of dense hair, which remains for some time after the stipules have fallen off. The uppermost or floral leaf is smaller than the rest, lanceolate.—*Peduncles* flattish, supported by ovate, acute, three-lobed, ciliate bractes.—*Flowers* small, ternate, short-pedicelled.—*Calyx* with five ovate, obtuse, short lobes.—*Corolla* very short, with a campanulate tube, and densely bearded throat.—*Stamina* a little elevated above the limb.

7. *P. Reevesii*, Wall.

*Leaves* oblong, lanceolate, acute at each end, smooth, glaucous.—*Stipules* broad-ovate, adpressed, with a rounded apex. *Panicle* terminal, oval, small, with decussate branches. *Calyx* truncate. *Corolla* short, with a densely bearded throat.

A native of China, probably near Canton, from thence introduced into the Botanic Garden at Calcutta, in 1821, by my worthy friend John Reeves, Esq. to whose knowledge and zeal that institution owes many valuable additions of Chinese plants. It blossomed while only a few feet high in April the following year.

Probably a large shrub. *Branches* round and thick, with copious small whitish dots; upper extremities slightly compressed.—

*Leaves* rather approximate, from six to seven inches long, a little canaliculate, slightly rugose along the nerves, coriaceous, sub-acuminate, acute at the base, rather pale and glaucous, opaque, strongly marked with sub-opposite nerves underneath, each having an axillary foveola.—*Petiol* half an inch long, round, thick, obscurely pubescent.—*Stipules* measuring half the length of the petiols, closely adpressed, broad-ovate, very obtuse, concealing within the base a series of short hairs; deciduous.—*Panicle* sub-sessile, ovate, much shorter than the uppermost leaves, smooth, with short, decussate ramifications.—*Bractes* opposite under each division, lanceolate, acute, deciduous.—*Flowers* small, ternate, inodorous, pea-green, sub sessile.—*Calyx* obscurely, unequally, and obtusely five-lobed.—*Tube* of the corolla sub-campanulate; border divided into five lanceolate, acute laciniae, their apex pubescent, slightly incurved. A dense tuft of snow-white hairs protrudes considerably above the throat, concealing the stamina.—*Ovarium* as in all the other species, two-celled, each cell containing an upright sub-cylindric ovulum.—*Style* capillary, perforating at the base a fleshy glandular convex disc which crowns the ovary *Stigma* oblong, two-lobed, smooth.

#### 8. *P. aurantiata*, Wall.

*Leaves* lanceolate, acuminate, smooth, short-petioled. *Stipules* ovate, acuminate. *Panicle* terminal, erect, penduncled, with verticilled branches. *Flowers* ternate; the *intermediate one* sessile. *Calyx* truncate. *Corolla* with long tube and *laciniae*, villous under the throat.

Specimens of this distinct species were communicated to me in 1819, by Mr. Jack, who had gathered them at Penang.

Probably a large shrub; all its parts perfectly smooth. *Upper branches* complanate.—*Leaves* approximate, from five to seven inches long, shining, minutely dotted beneath, with slender, parallel, and approximate nerves underneath, on very short petiols.—*Stipules* very deciduous, ovate, terminated by a long subulate acumen.—*Panicle* considerably elevated on a flattish peduncle, many-flowered, erect; the secondary and tertiary ramifications verticilled, supported by



small bractes, slightly pubescent.—*Calyx* truncate, obscurely five-lobed.—*Corolla* larger than in any of the other species described here, infundibuliform.—*Tube* cylindric, villous from the middle of the inside to the throat; *laciniæ* of the border linear-lanceolate, spreading.—*Stamina* exserted.—*Stigma* two-lobed under the throat.—*Berry* obovate, as large as a cherry-stone, orange-coloured.

9. *P. denticulata*, Wall.

*Stem* adscending with a creeping base. *Leaves* ovate, short, acuminate. *Stipules* ovate, sub-cordate, with dentate apex. *Panicle* terminal, cymose, with numerous very small flowers. *Seeds* hemispheric.

I have only found this in the forest of Sanko in Nipal, blossoming in the rainy season, and ripening its fruit in October.

*Stem* adscending, creeping at the base, round, as thick as a swan's quill, purplish, smooth, one or two feet long, undivided or sparingly dichotomous; its upper extremity compressed.—*Leaves* ovate, or sub-obovate, with a short, broad acumen, coriaceous, from six to nine inches long, base tapering, upper surface dark green, shining, under one pallid, marked with very numerous, closely approximated nerves and reticulate veins; their margins sub-cartilaginous. *Petiol* round, slightly furrowed, above half an inch long.—*Stipules* ovate, with a sub-cordate base, somewhat fleshy, marked at the apex with two or three unequal, subulate teeth, gibbous, pubescent on the outside, villous within at the base, nearly equalling the petiols. *Panicle* terminal, broad-ovate, cymose, pubescent, peduncled, erect, consisting of very numerous, extremely small flowers. *Bractes* small, lanceolate. *Calyx* with five subulate teeth. *Corolla* sub-rotate, with a slightly hairy throat. *Berry* (not quite ripe,) globular, two-celled, two-seeded, purple, of the size of a small currant. *Seeds* semi-globular, as in my *P. sphaerocarpa*.

10. *P. adenophylla*, Wall.

Shrubby, smooth. *Leaves* lanceolate, acuminate, shining, glandular. *Stipules* ovate, obtuse, with connate bases. *Racemes* terminal, cylindric. *Throat* of the corolla, villous.

Native of Silhet, blossoming in the hot season. Specimens as well as growing plants were from thence sent to this garden in 1815, by the late Mr. Smith.

Beng. Alada Choonari.

A small ramous shrub with opposite, round, ash-grey branches; the uppermost dichotomous, somewhat compressed. *Leaves* opposite, coriaceous, lanceolate, acuminate, acute at the base, transversely rugose, shining above, pallid, with parallel nerves underneath, the axils of the latter with a deep glandular fovea which is contracted at the mouth, and appears elevated on the upper surface; from three to four inches long. *Petioles* scarcely half an inch long, rounded, with a number of jointed hairs within their base. *Stipules* adpressed, broad-ovate, equalling, and sometimes slightly exceeding the petioles, their base connected into a tube which is villous within; deciduous, keeled on the back.—*Raceme* terminal, erect, about the thickness of a small finger, scarcely equalling the uppermost pair of leaves in length; mostly with a few small branches at the base.—*Peduncles* flattened, from one to three inches long, surrounded at the base with two opposite, sheathing, aristate-acuminate bractes; *partial*, very short, approximate, opposite, twice or thrice trichotomous, with very small *bractlets*.—*Flowers* small, greenish, fascicled, sub-sessile.—*Calyx* truncate, obscurely five-toothed.—*Corolla* with a short infundibuliform tube; *laciniæ* lanceolate, acute; *faux* villous.—*Stamina* recondite among the villi of the throat.—*Stigma* in the mouth of the corolla divided into two oval, fleshy, scabrous lobes.

*Obs.* The inflorescence of this species renders it very distinct from all those of the East Indies. The leaves are remarkably glandular in the axils of the nerves; a circumstance which is more or less the case with all genuine *Psychotriæ*. The leaves of the young shoots are generally twice as large as the rest, of an oblong, sub-ovate form.

11. *P. curviflora*, Wall.

*Leaves* lanceolate-oblong, long, acuminate, tapering much down-

wards, long-petioled. *Raceme* small, terminal. *Corol* long and slender, tubular, with an incurved border.

Specimens were collected at Penang and communicated by Mr. Jack, in 1819.

*Branches* round, rather slender, smooth, dotted with purplish specks. — *Leaves* oblong, lanceolate, finely acuminate, tapering very much downwards, thin and membranous, smooth, shining above, with pubescent rib and nerves underneath, the latter glandular, connected by a distinct, sub-marginal, arched vein; reticulate; their length from seven to ten inches; the acumen very narrow and linear, about an inch long. — *Petiol* very slender, two or three inches long; its apex gently widening into the narrow base of the leaf. — *Stipules* ovate, rounded, obtuse, adpressed, withering, sometimes uni- or bi-dentate at the upper end; smooth, with a series of adpressed hairs within their insertion. — *Raceme* terminal, smooth, oval, compact, erect, short-peduncled, many times shorter than the leaves, consisting of opposite, approximate, more or less compound fascicles of sessile, long flowers. — *Bractes* very small. — *Calyx* minute, smooth, with five toothlets. — *Corolla* tubular, sub-ascending, nearly an inch long, cylindric, slender, striated, widening a little towards its limb, which is very short, five-lobed; lobes lanceolate, acute, when dry they are incurved; throat naked, smooth. — *Filaments* inserted a little above the middle of the tube and there decurrent, capillary, longish. *Anthers* linear, elevated above the throat. — *Ovarium* oblong, two celled, two-seeded; ovula erect, flat. — *Style* capillary. *Stigma* linear, bipartite, below the apex of the tube.

*Obs.* The long, slender, curved tube of the corolla, its proportionately short incurved border and the long capillary filaments inserted near the middle of the tube render this and the next species very distinct from all the preceding ones. Both seem to approach to *Chassallia* (*Chasalia*?) Commers. Juss. in Mem. du Mus. vi. 379.

## 12. *P. ophioxylodes*, Wall.

Dichotomous, sub-scandent, smooth. *Leaves* lanceolate, short,

petioled, acuminate. *Stipules* ovate, acuminate. *Corymb* small, terminal. *Corol* long, slender, tubular, with incurved border.

A native of Silhet from whence specimens were sent to me in 1821. Flowering time March.

Beng. Basook.

A smooth shrub. *Branches* dichotomous, slender, cylindric, sub-scandent, greyish.—*Leaves* approximate, widely spreading, opposite, lanceolate, acuminate, base acute, both sides smooth; vessels on the under surface as in the last species; about five inches long.—*Petioles* very short.—*Stipules* ovate, ending in a long, sometimes bifid, cuspidate acumen, withering and at length falling off.—*Flowers* disposed in a terminal, small, short-peduncled corymb; they are rather shorter than in the last, but in other respects of precisely the same structure.

### CANTHIUM. Lamarck.

*Calyx* four or five-toothed. *Corol* one-petalled, tubular. *Germ* two-celled, one-seeded; attachment sub-superior. *Drupe* inferior two-seeded. *Embryo* inverse, and furnished with a perisperm.

#### 1. *C. angustifolium*, R.

Shrubby, armed. *Leaves* lanceolate, lucid. *Flowers* axillary, pentandrous. *Style* length of the corol.

Beng. Kota-mulli.

A well armed, shrubby, very ramous species, a native of the hills in the vicinity of Chittagong, Silhet, and the whole eastern frontier of Bengal. Flowers from March till July, and probably the greater part of the year.

*Trunk* obscure. *Branches* numerous; *young shoots* straight, slender, firm, round and smooth.—*Spines* axillary, expanding.—*Leaves* on the youngest shoots in single, opposite pairs; on the older branchlets fascicled; all are short-petioled, lanceolate, entire, long, taper-pointed, firm and polished, from one inch to two and half

long, and half or three-quarters of an inch broad.—*Stipules* interfoliaceous, ensiform. *Flowers* axillary, several together, small, short-peduncled, greenish-yellow.—*Calyx* acetabuliform, five-angled, five-toothed.—*Corol* ; *tube* short and gibbous ; *border* of five lanceolate segments. *Filaments* five, from the fissures of the corol, short. *Antbers* linear, erect, equalling the border of the corol.—*Germ* inferior, turbinate, two-celled, with one ovulum in each, attached to the upper part of the partition. *Style* the length of the corol. *Stigma* large, with a bifid apex.—*Drupe* inferior, sub-rotund, apex retuse, as in *C. parviflorum*, smooth, size of a black currant, when ripe yellow, two-celled, though one of the cells is frequently abortive.

2. *C. parvifolium*, R.

Shrubby, armed, hairy. *Leaves* oval, entire. *Flowers* axillary, crowded, pentandrous ; *tube* of the corol globular.

The shape of the leaves alone forbids the supposing of this to be Plukenet's *Amaranthoides indicum*, verticillatum, *Parietariæ hirsutis foliis aculeatum*, &c. *Alm.* 27. t. 133. f. 3. Consequently it is neither *Monetia diacantha*, Willd. *Spec.* i. 670. nor *Azima diacantha*, Lammark, *Encyclop.* i. 343.

Is a middling-sized, very rigid, ramous shrub, the tender shoots and underside of the leaves hairy. The inside of the tube of the corol is surrounded with a circle of straight white bristles of its own length, inserted round its mouth, and pointing to its bottom. Flowering time the rainy season.

3. *C. parviflorum*, Roxb. *Corom.* i. 3. t. 51.—*Gart. sem.* iii. 93. t. 196.

Shrubby, thorns opposite, horizontal. *Leaves* opposite and fascicled. *Flowers* axillary, tetrandrous.

*Kanden-kura*, Rheed. *mal.* v. 71. t. 36.

*Webera tetrandra*, Willd. *Spec.* i. 1224.

*Teling.* Balusoo-kura.

This is one of the most common, scraggy, thorny bushes on the

Coast; every soil, and situation suits it. Flowering time the hot season; the seeds ripen in September.

*Trunk* scarcely any, but branches innumerable, the smaller are regularly cross-armed, and spreading:—*Thorns* simple, opposite, above the axils, spreading, cross-armed, very strong and very sharp; in luxuriant plants they are sometimes three-fold.—*Leaves* on the young shoots opposite, on the older branchlets fascicled, short-petioled, reflexed, ovate, entire, smooth; size various.—*Stipules* connecting, subulate.—*Umbellets*, or rather *racemes* opposite, below the thorns, small, about the length of the leaves.—*Peduncles* and *pedicels* smooth, round.—*Flowers* small, yellow.—*Calyx* above, four-toothed; *teeth* acute; permanent.—*Corol* one-petalled. *Tube* gibbous, short; *mouth*, downy. *Border* four-parted; *segments* ovate, expanded.—*Filaments* four, in the mouth of the corol. *Anthers* ovate.—*Germ* inferior, globular, two-celled, with one *ovulum* in each attached to the axis above its middle. *Style* rather longer than the tube of the corol. *Stigma* headed.—*Drupe* obcordate, laterally compressed a little with a hollow on each side, size of a cherry, crowned with the remaining calyx, fleshy, smooth, yellow, two-celled.—*Nuts* two, one in each cell, oblong, one-celled.—*Embryo* inverse, sub-cylindric a little curved, and furnished with a soft amygdaline perisperm.

*Obs.* The bush makes excellent fences. The ripe fruit is eaten by the natives. The leaves are universally eaten in curries; on that account the plant has the additional name *kura* which means esculent.

4. *C. didymum*, Gært. *Carp.* iii. 94. t. 156.\*

Sub-arboreous, unarmed. *Leaves* oblong and oval: *Cymes* axillary, sub-sessile. *Flowers* pentandrous. *Style* longer than the cylindrical tube of the corol, with a mitre-shaped stigma.

*Teling.* Naum-papula.

*Webera cymosa*, Willd. *Spec.* i. 1224.

A small tree, a native of the interior mountains of the coast of Coromandel.

*Bark* smooth, on the young shoots shining green.—*Leaves* oppo-

\* *C. cymosum*, Pers. *enchirid.* i. 200.—N. W.

site, short-petioled, oval, firm, smooth, of a shining deep green, about six inches long; on the under side in the axils of the principal veins are to be found the characteristic glands of the *Gardenias*, they are smooth and hollow; in the *Gardenias* they are generally surrounded with a hairy margin.—*Stipules* within the leaves.—*Cymes* axillary, short-peduncled, simple, or compound, bearing many small, white, very fragrant flowers.—*Calyx* and *corol* as in the family.—*Filaments* five, short, somewhat crooked, inserted into the downy throat of the tube of the corolla.—*Anthers* incumbent, oblong.—*Germ* inferior, globular. *Style* nearly twice the length of the tube. *Stigma* large, mitre-shaped.—*Pericarp* a top-shaped berry, the size of a small cherry, when ripe black and shining, crowned with the calyx.—*Seeds* two.

5. *C. moluccanum*, R.

Pentandrous, unarmed. *Leaves* oblong. *Style* length of the short gibbous tube of the corol; *stigma* turbinate.

A native of the Molucca Islands.

VANGUERIA. Juss.

*Calyx* five-toothed. *Corol* one-petalled; *tube* gibbous; mouth shut with hairs. *Germ* five-celled; *cells* one-seeded; attachment interior. *Berry* inferior, five-seeded. *Embryo* inverse, and furnished with a perisperm.

1. *V. spinosa*, R.

Shrubby, armed with decussate spines.

*Sung.* पिण्डीतकः, Pindeetuka, पिण्डीरामः, Pindeerama, पिण्डी धाराफलः, Pindeedharaphula, मरुवकः, Muroovuka, असनः, Shwasuna, कराहाटः, Kurahata, कराहाटकः, Kurahatuka, शूल्यः, Shulya, शूल्यकः, Shulyuka, मदनः, Muduna, कारिकारः, Karikara, तूर्यः, Toorya, तगरः, Tugura, कण्टालः, Kuntala, बिषमुष्टिः, Bishumooti.

thi, विष्णुषुकः, Bishupoospuka, कर्दूनः, Chhurduna, घण्टालः, Ghuntala, घण्टाखः, Ghuntakhya, हर्षः, Hursha, वस्तिरोधनः, Vustirodhuna, ग्रन्थिफलः, Grunthiphula, मोनफलः, Monuphula, and all the names of मदन or Cupid.

Beng. Muyna.

A small tree or large bush ; a native of Bengal and also of China, I presume, as there are some plants in the Botanic Garden brought from thence. Flowering time the beginning of the hot season ; fruit ripe in three or four months afterwards.

*Trunk* irregular, which with the branches is armed with strong straight, opposite, or three-fold thorns.—*Leaves* opposite, and three-fold, short-petioled, ovate-oblong, entire, smooth, from three to four inches long.—*Stipules* opposite, and three-fold, within the leaves as in *Gardenia*.—*Flowers* axillary, fascicled on a common short peduncle, with proper, longer pedicels, small, of a pale greenish-colour.—*Calyx* five-toothed.—*Corol* one-petalled. *Tube* sub-globular ; *mouth* shut with much long, white hair ; *border* generally five-parted, spreading. *Filaments* five, very short, inserted into the mouth of the tube of the corol. *Anthers* small, cordate.—*Germ* inferior, turbinate, four- or five-celled, with one *ovulum* in each, attached to the axis a little above the middle. *Style* so long as to elevate its large glandular four- or five-lobed *stigma* just above the anthers.—*Berry* or rather *Drupe* round, turbinate, size of a cherry, smooth, when ripe yellow, succulent, and edible.—*Seeds* four or five, obliquely oblong, inner edge narrower and straight. *Integuments* two ; *exterior* a hard, dark-coloured nut ; *interior* membranaceous.—*Perisperm* conform to the seeds, amygdaline.—*Embryo* inverse, a little curved, *Cotyledons* scarcely so long as the radicle, lanceolate. *Radicle* columnar, superior.

*Obs.* The fruit is eaten by the natives. Its flowers come exceedingly near to those of my *Canthium parviflorum*, as does also the whole habit of the plant.



*LONICERA*. Schreb. Gen. N. 319.

*Corol* one-petalled, irregular. *Berry* inferior, two-celled, many-seeded.

1. *L. quinquelocularis*, Hardwick, in *Asiat. Res.* vi. 351.

Shrubby. *Leaves* petioled, elliptic, acute, entire, villous. *Peduncles* axillary, solitary, short, two-flowered. *Berries* five-celled.

Found by Colonel Hardwick, in vallies about *Adwanee* on his tour to *Shreenugura*, and there called *Lung-phool* by the natives.

*Obs. by N. W.*

My highly respected friend Major-General Hardwick suspects this to be my *L. ligustrina*, and the drawing, with which he has favored me, is not unlike it. But the structure of the ovary and fruit is totally different; and the leaves are much larger, which is also somewhat the case with regard to the flowers.

*Additional species by N. W.*

2. *L. japonica*, Thunb. *jap.* 89.

Hairy and villous. *Leaves*-oblong cordate, ash-grey and villous underneath. *Peduncles* axillary and terminal, two-flowered, forming an ample leafy raceme. *Bractes* linear. *Tube* of the *corolla* hairy, filiform, very long, even.

*L. japonica*, Andrews's repos. ix. 583.—Edwards's regist. i. 70.

*L. Periclymenum*, Lourier. *Cochinch.* ed. Willd. i. 195?

*Nin-too*, it. *Sin-too*, vulgo *Sui-Kadsura* et *Kin gin qua*, i. e. *auri argenteque flos*, Kæmpf. *Amœn.* 785.

Native of *Silhet* and *Nipal*. In the latter country it embellishes most of the forests both in the valley and on the surrounding hills with its elegant blossoms from April to June. The fruit ripens in October. From both countries it was introduced in 1818 into this

garden, where it thrives luxuriantly, is easily propagated by layers and blossoms freely in the hot season.

*Nipal, Socha.*

*Beng. Teä parooa.*

I have very little to add to the excellent description and figure in the *botanical register* quoted above, which agrees perfectly with my plant. The figure in Andrews's work wants its copious long hairs.

In Nipal this most charming shrub grows to a luxuriant height, climbing and rambling to a very considerable extent. *Stem and branches* cylindric. *Leaves* rather remote, oblong or ovate, acuminate, from three to five inches long, shining above, and villous along the nerves, margins hairy; under surface beautifully reticulate, glaucous, villous and hairy. The flowers deserve well the appellation which the accurate Kämpfer says they bear in Japan, "*Gold and Silver flowers*," being at first snow-white, and gradually changing into a beautiful yellow, as do several of the species of *Gardenia*; acquiring thereby a peculiarly elegant, varied appearance. — *Berries* nearly globular, smooth, deep-purple, covered slightly with a pale bloom, crowned with the persistent, villous calyx, about the size of a black currant, three-celled; *cells* four-seeded.

### 3. *L. glabrata*, Wall.

Smooth. *Leaves* ovate, acuminate, glaucous underneath. *Flowers* smooth, geminate, in axillary and terminal fascicles. *Bractes* ovate. *Tube* of the *corolla* rather short, cylindric, widening at its apex.

*L. nigra*, Thunb. jap. 89; Id. in Act. Soc. Linn. 11. 330?

I have only found this at the top of Sheopore; it has been brought to me from Kabelas in the valley to the N. of that mountain, blossoming and fruiting rather earlier than the preceding species.

A climbing, large, branchy shrub, with smooth, shining, brownish stem and branches; the upper end of the latter, and the young shoots slightly villous. — *Leaves* ovate-oblong, acuminate, from three to five inches long, petioled, and perfectly distinct, rounded, seldom obtuse at the base, perfectly smooth on both sides, except underneath along

the elevated rib and nerves, which are pubescent; the upper surface polished, the under one glaucous, transversely reticulate.—*Petioles* scarcely half an inch long, mostly a little villous, surrounding the stem and branches with an elevated margin (as has been well observed by Mr. Edwards in the preceding species.)—*Peduncles* axillary, opposite, and terminal, short, villous, bearing towards the apex several opposite, approximate, very short, two-flowered pedicels.—*Flowers* yellow, much shorter than those of *japonica*, smooth, with a purplish bloom on the outside, united by two's at the apex of each pedicel and supported by a common *involucrum*, consisting of six very small ovate, ciliate *bractes*, the two outermost of which are acute, the intermediate opposite pairs rounded, obtuse, and rather shorter.—*Calycine laciniae* subulate, ciliate.—*Tube* of the *corolla* about an inch long, widening at the apex into the bilabiate limb, which as well as the filaments and style are somewhat hairy; *upper lip* trifid, obtuse, intermediate lobe retuse; *the under one* oblong.—*Stigma* capitate, scabrous.—*Berries* distinct, almost black, three-celled; *cells* four-seeded, exactly like those of the foregoing species.

*Obs.* This species comes near to *japonica*, as will be perceived from the description just given of it. It is however easily distinguished by its smoothness, and the shorter flowers, the tube of which is not filiform as in that, but cylindric, widening at the apex; the *bractes* differ also in not being linear or subulate. Together with that it is intermediate between *Lonicera* and *Caprifolium*.

#### 4. *L. acuminata*, Wall.

*Leaves* from ovate to oblong-cordate, finely acuminate, slightly hairy. *Peduncles* axillary, longer than the petioles, villous, two-flowered. *Corolla* not gibbous, infundibuliform.

Found by my people at Gosain-Than in the Himalaya mountains; in flower in July.

A very ramous climbing shrub with numerous long slender smooth branches, covered with a fibrous, separating epidermis; the younger ones as well as the petioles and peduncles densely villous, becoming ferruginous on being dried.—*Leaves* distinct, spreading,

longer than their interstices, varying from ovate to oblong, finely acuminate, tapering, base cordate, from three to five inches long, rather sparingly beset with hairs on both sides, membranous. *Petiols* half an inch long, surrounding the place of insertion with a slightly elevated line.—*Peduncles* axillary, solitary, twice as long as the petiols, two flowered, bearing often at the apex a pair of lanceolate, narrow, spreading *floral leaves*, one or two inches long, sometimes, though not always, supplying the place of the two longest bractes. At the apex of the peduncle there is the usual involucre of six small *bractes*, which are hairy; the two outer ones linear, spreading, exceeding the ovaria in length; the intermediate opposite pairs small, adpressed, ovate, obtuse.—*Flowers* of the same colour and form as those of *L. Xylosteum*, to which this species comes nearest, and also about their size; they are yellow, tinged with pale purple, slightly hairy on the outside.—*Lacinia* of the calyx lanceolate, ciliate, bluish. *Tube* of the *corolla* not gibbous at the base. *Ovarium* smooth; *style* and *filaments* hairy; *stigma* capitate.

### 5. *L. lanceolata*, Wall.

Sub-erect? *Leaves* lanceolate, acuminate, hairy; base acute; glaucous underneath. *Peduncles* axillary, longer than the petioles, like them villous. *Berries* two, distinct, globular, smooth.

Gathered by my people at Gosain-Than; in fruit in August.

*Stem* shrubby, covered with a fibrous epidermis, probably erect, cylindric. *Branches* slender, round, pubescent, their base surrounded by a number of lanceolate, acuminate, arid, one-nerved persistent bud-scales; they appear to be but slightly climbing.—*Leaves* lanceolate, tapering, acuminate, acute at the base, about three inches long, with somewhat uneven, sub-repand margins, shining, pubescent above; glaucous, and hairy underneath, nerved and reticulate-veined.—*Petiols* about one-third of an inch long, villous.—*Peduncles* axillary, opposite, villous, twice as long as the petiols. *Berries* two, distinct, of the size and colour of a black currant, smooth, shining, crowned, three-celled, supported by two linear, and four ovate bractes, the latter recurved and shorter.—I have not seen the flowers.

6. *L. Leschenaultii*, Wall.

*Leaves* ovate, sub-cordate, acute, hoary underneath. *Peduncles* two-flowered, axillary, solitary, or terminal, fascicled. *Tube* of the corol with an even base.

Kindly communicated by Mr. Leschenault, who found it on Neel-giri, and who informs me the native name is "*Moulle queda*."

A climbing shrub. *Branches* round, villous.—*Leaves* opposite, spreading, ovate, acute, with a sub-cordate base, longer than their interstices, from one to two inches long, smooth above, margins ciliate, villous, hoary, and almost white underneath, with elevated rib, nerves, and elegantly reticulate veins.—*Petiols* villous, about four lines long.—*Peduncles* short, villous, two-flowered, axillary and solitary, or terminal, fascicled. At the apex of each peduncle there is an involucre, consisting of six unequal villous bractes which support the two flowers; two of them are opposite, linear, spreading in a line with the back of each ovary, which they exceed considerably in length; the four others are several times shorter, ovate, acute, adpressed to the ovary and placed in two opposite pairs between the outer ones. The five teeth of the calyx linear, villous.—*Corolla* large, probably yellow, with a villous, slender tube which measures an inch in length; base not gibbous; apex gently widening into the two-lipped, large, open border, which is nearly as long as the tube; the *upper lip* consisting of four ovate, obtuse laciniae; *under lip* deeply divided; *laciniae* linear, widening at the obtuse apex; *throat* villous.—*Filaments* long, filiform, equalling the border. *Ovary* ovate, villous.—*Style* as long as the stamina. *Stigma* large, capitate.

7. *L. diversifolia*, Wall.

*Leaves* ovate, cuspidate, acute, or acuminate, base rounded, or sub-cordate, villous underneath. *Peduncles* axillary, shorter than the petiols, two-flowered. *Calyx* cup-shaped, acutely five-lobed. *Corol* gibbous, infundibuliform, villous.

A specimen was communicated by Dr. Govan, collected on the mountain of Gurwal.

*Branches* round, climbing, covered with soft villosity. — *Leaves* va-

rying in figure, from ovate to cordate, with a simply acute, or acuminate, always cuspidate apex, three inches long, margins rather unequal; *pubescent* above, densely villous and soft underneath.—*Petioles* very short, villous. *Peduncles* axillary, decurved, scarcely two lines long, shorter than the petioles, smooth, two-flowered. *Bractes* ciliated with long hairs; two of them are linear, four ovate.—*Flowers* axillary, villous on the outside, resembling those of *Xylosteum* as to size and colour. *Calyx* cup-shaped, divided into five acute, villous lobes.—*Tube* of the *corolla* gibbous at the base.—*Ovarium* hairy.

*Obs.* It is much like *Xylosteum* but differs both in its greater villosity and the figure of the leaves; its calyx is larger and cup-shaped. *Loureiro's Lonicera Xylosteum* is probably not this species.

8. *L. ligustrina*, Wall.

*Leaves* lanceolate, tapering from the rounded base, acute, shining, smooth, ciliate, sub-sessile. *Flowers* binate, pubescent, gibbous, on axillary peduncles. *Base* of the *calyx*, concave, truncate, loose.—*Ovarium* and *berries* covered by a common membrane.

I have found it in shady forests on several of the mountains of Nipal, blossoming in summer and ripening its fruit during the rains.

A branchy, ramous, slender shrub, with long, cylindric, climbing *branches*, covered with ash-grey, shining, smooth bark; *young shoots* villous, surrounded at the base with some lanceolate, acute, quadrifariouly imbricate *bud-scales*.—*Leaves* opposite, sub-bifarious, at least twice as long as their interstices, from lanceolate to ovate lanceolate, rounded at the base, from thence tapering into a cuspidulate point, one or two inches long, smooth, coriaceous, ciliate, dark-green, lucid above, paler and reticulate underneath. *Petioles* exceedingly short, measuring scarcely a line and a half in length, villous.—*Peduncles* axillary, opposite, villous, three lines longer than the petioles, a little nodding at the apex, two-flowered. *Bractes* two, at the apex of the peduncle, supporting the flowers, opposite, spreading, linear, ciliate, smooth.—*Calyx* smooth, minute, contracted at the middle and having the shape of two cups attached to each other by their bottoms; the margin of the lower cup truncate and entire, a little oblique, adhering obliquely to the vertex of the ovarium; upper

cup sub-cylindric, with five minute, linear, ciliate, erect toothlets.—*Corol* yellowish-white, infundibuliform, half an inch long; *tube* gibbous and pubescent at the base, villous within; the protuberance obtuse, pointing outward; *throat* somewhat widening; border sub-equal, spreading, divided into five ovate, obtuse, ciliate laciniae. *Filaments* smooth, inserted immediately under the throat, about the length of the limb, somewhat spreading; rather unequal. *Anthers* linear, versatile. *Ovaria* two, ovate, distinct, but covered by a common membrane, so as to appear as if there was only one, which at the vertex bears two divergent calyces; three-celled, cells with three-pendulous ovula.—*Style* hairy, about the length of the stamina. *Stigma* small, globular.—*Berries* loosely covered with the common membrane of the ovaria, small; I have not seen them in a ripe state.

*TRIOSTEUM. Schreb. Gen. 520.*

*Calyx* five-parted, equalling the one-petalled corol. *Corol* with the border divided into five sub-equal segments. *Berry* inferior, one-celled. *Seeds* from three to five, pyrenous.

1. *T. hirsutum, R.*

Shrubby, hirsute. *Leaves* short-petioled, lanceolar, entire, acuminate. *Flowers* axillary, sessile, much shorter than their numerous lanceolar bractes. *Berries* five-seeded.

A native of Chittagong, where it flowers during the hot season; seed ripe in June and July.

2. *T. himalayanum, Wall.*

Covered with long hairs. *Leaves* obovate, acute, connate at the base, the lowermost free. *Raceme* terminal, verticilled.

Brought from Gosain-Than by my plant-collectors, in fruit in August. It grows on very high and exposed rocks.

*Root* thick and woody, perennial.—*Stem* erect, round, as thick as a swan's quill, becoming slenderer at the apex, from two to three feet high, undivided, as well as the leaves densely beset with large, distinct, spreading, rather soft, shining, silvery hairs.—*Leaves* twice as long as their interstices, very spreading, membranous, sub-decussate, from six to eight inches long, obovate, rounded at the end,

with a short acumen, about four fingers broad, somewhat narrower towards the base, and there uniting with the opposite one and surrounding the stem with a broad flat lamina; margins rather uneven, a little waved; both sides very soft and hairy; nerves and rib elevated on the under reticulate surface. The lowermost pair or two are small, rather remote, oblong and not connate.—*Flowers* I have not seen.—*Berries* oval, the size of a very small gooseberry, crowned by a small calyx, which is divided into five ovate, very short lobes; yellow, hairy, three-furrowed, one-celled, three-seeded. *Pulp* soft, scanty.—*Seeds* rather large, oblong, somewhat three-sided, smooth, greenish-black; the back convex, with two broadish, longitudinal furrows which vanish downwards; inner two sides flat, separated by a rounded angle; upper end a little narrower, and marked on the inside with a small excavated umbilicus. *Outer integument* thick, bony, blackish; the *inner* one between membranous and fungous, yellowish, thin, closely applied with its inner polished surface to the perisperm, marked along the margins of the latter with a broadish fascicle of vessels, which descends from the umbilicus and completely surrounds the seed.—*Perisperm* conform to the seed in its general figure, but much more flat, scarcely a line in diameter, the back scarcely convex, the inner side divided by an obscure line; semi-transparent, pale-yellow, friable; its vertex marked with a lateral umbilicus, its margins rounded, obscurely furrowed from the pressure of the umbilical chord; its substance is divided into two parts by an exceedingly narrow cavity, parallel to its sides, extending to within a line of the periphery, filled with a mucilaginous pulp; this structure gives the perisperm the appearance of two flat cotyledons, on its being divided horizontally. *Embryo* very short, thick, pendulous from the apex of the cavity of the perisperm, milk-white; cotyledons oval, obtuse; *radicula* superior, conical.—N. W.

*Additional Genera by N. W.*

**LEYCESTERIA.** Wall.

*Calyx* above, unequally five-parted. *Corolla* infundibuliform, gibbous above the base of the tube; *border* divided into five sub-



equal lobes. *Filaments* exserted. *Stigma* capitate. *Berry* crowned, five-celled, many-seeded. *Seeds* smooth, shining.

The station of this genus in the system of Linneus is *Pentandria monogynia*, the section with superior monopetalous flowers, and a five-celled berry.

In the natural arrangement it belongs to the fifth section of *Rubiaceæ* (*Juss. in mem. du. mus. vi. 398*), connecting it with the family of *Caprifoliaceæ*.

It is a beautiful large shrub with rambling elongated fistulous branches, opposite, glaucous leaves, and nodding, short racemes, furnished with coloured, foliaceous bractes. I have great satisfaction in dedicating it to my highly esteemed friend William Leycester, Esq. chief judge of the principal native court under the Bengal presidency, who during a long series of years and in various distant parts of Hindoo-sthan has pursued every branch of horticulture with a munificence, zeal, and success which abundantly entitle him to that distinction.

#### 1. *L. formosa*, Wall.

This charming shrub grows wild on the highest mountains surrounding the valley of Nipal, blossoming from April to October. Its fruit ripens at the end of the rains and during the commencement of winter. I have also had it from much more northerly situations towards Gosain-Than. According to my friend Dr. Govan it is found in abundance at an elevation seldom less than 8,000 feet above the plains, among the pine and oak forests of Bishuhur, as at Huttoo, and at Desoo in the Thakooræe of Kioonthul, blossoming from June till August, and called by the natives Nulkuroo.

#### *Parbuteeya, Oodooa.*

*Stem* shrubby, erect, leaning at the apex, from ten to twelve feet high, from an inch to an inch and a third in diameter, cylindric, hollow, intercepted by distant partitions, covered with smooth, pale brown, shining, rather scabrous bark; wood white, close-grained. *Branches* numerous, opposite, spreading, elongated, slender, weak, rambling over adjoining shrubs, or decumbent, fistulous, cylindric, smooth; when dried they appear contracted and joined at their divisions and at the insertion of the leaves; their base is surrounded by several

lanceolate bud-scales. A number of luxuriant shoots issue from the root, which are thicker and more erect than the branches, of a purplish colour, as are also sometimes the younger branches.—*Leaves* opposite, spreading, ovate-lanceolate, with a rounded or sub-cordate base, from whence they taper into a very long, linear acumen, entire, membranous, generally longer than their interstices, from four to five inches long, those of the radical shoots very remote; smooth, opaque above, glaucous underneath, and roughish from a few short hairs observable on the elevated rib and oblique nerves; veins minutely reticulate.—*Petiols* slender, hairy and channelled, about half an inch long, widening at the base, surrounding the place of insertion with an elevated margin, which on the older branches widens into a ligulate, recurved, interpetiolar process.—*Flowers* white with a tinge of purple, inodorous, middling-sized, sessile, sub-fascicled, disposed in approximate verticils of fives and sixes, forming short, nodding, leafy, oblong *racemes*, which terminate the branches and branchlets.—*Bractes* large, foliaceous, membranous, sub-decussate, more or less purple, pubescent and ciliate, veined, lanceolate, attenuate and finely acuminate, sessile, surrounding the rachis with their concave basis; there are generally six under each verticil, of which the two outer ones are two or three inches long, rounded and generally connate at the base; the inner ones much smaller; those at the base of the raceme, are considerably larger than the rest. *Calyx* above, persistent five-parted, small; *divisions* linear, acute, ciliate, with gland-capitate hairs; unequal: two considerably longer than the rest.—*Corolla* infundibuliform, pubescent, about two-thirds of an inch long; *tube* cylindric, very narrow at the base, and immediately above it swelled and gibbous all round; widening into the five-parted campanulate border, its inside marked with five oblong pubescent protuberances, alternating with the insertion of the filaments.—*Segments* nearly equal, ovate, bluntish, a little spreading.—*Stamina* five, erect, about the length of the border, alternating with its laciniae and inserted immediately below their fissures; *filaments* filiform, somewhat hairy; *anthers* vacillating, oblong, two-celled, inserted a little above the middle of their back, shorter than the filament.—*Ovarium*

ovate, hairy, supported by a small lanceolate *proper bractlet*, five-celled, many-seeded; *ovula* attached in a double series to an axile placenta.—*Style* filiform, shorter than the stamina. *Stigma* fleshy, capitate, entire.—*Berry* dark purple, approaching to black, round, as large as a small gooseberry, covered with short, capitate hairs, obscurely ten-ribbed, crowned with the unaltered calyx; five-celled. *Pulp*, very soft.—*Dissepiments* thin, at length almost obliterated. *Seeds* small, numerous, about eight in each cell, attached to the linear, fleshy, axile *placenta*, by means of very short funicles; oval, flattened, pale brown, smooth and polished, obtuse, somewhat acute at the umbilical end. *Integuments* two, the outer one crustaceous; the inner one exceedingly thin and membranous.—*Perisperm* conform to the seed, fleshy. *Embryo* minute, cylindric, centripetal.

*Obs.* My friend Dr. Govan remarks with great propriety that this is a most beautiful shrub when in blossom, from the contrast of the deep green of its stem and leaves with the purple colour of the large bractes and the berries.—It comes nearest to *Hamellia*, from which it differs in habit, in the unequal calyx, and the infundibuliform corolla, with gibbous base and obscurely unequal border; in these respect as also by its connate bractes and persistent gemmaeous scales it approaches to *Caprifolium*.

### UROPHYLLUM. Wall.

*Calyx* sub-quinquefid. *Corolla* infundibuliform, five-parted, with villous throat. *Stigma* five-lobed. *Berry* underneath, globular, five-celled, many-seeded.—Jack's Mss.

The station of this genus, in the artificial as well as the natural system is the same as that of the preceding. Its habit is that of middling sized, erect shrub, with opposite, short-petioled leaves, remarkable on account of their extremely long and slender acumen, (whence the generic name;) with interpetiolar stipules, and small axillary crowded flowers. It consists of two species which were discovered on the Island of Penang in 1819 by Mr. W. Jack, who

has most kindly communicated the following descriptions together with dried specimens.

It undoubtedly comes near to *Patima* of Aublet, as far as can be judged from his imperfect account of it; also to *Sabicea* of the same author (*Schwenkfeldia*, Schreber.) From the latter it differs chiefly in the form of the corolla.

1. *U. villosum*, Wall.

Villous. Branches round. Calyx five-cleft.

Native country, Pulo-Penang.

A shrub with round villous branches. Leaves opposite, petioled, oblong-lanceolate, about ten inches long, terminated by a very long linear acumen; entire, smooth above, villous beneath. Petioles short. Stipules interpetiolar, longer than the petioles, oblong, acute. Peduncles axillary, short, supporting a verticillate capitulum of subsessile flowers. Bractes numerous, lanceolate, acute; four longer ones forming a kind of involucre beneath each verticil.—Calyx superior, short, campanulate, five-parted, with one or two smaller additional laciniae. Corolla greenish, rather longer than the calyx, hirsute at the faux; limb five-parted; laciniae ovate, acute, thickened at the points.—Aestivation valvate. Stamina five, shorter than the limb, and alternating with its laciniae; anthers linear, acute, emarginate at the base.—Style erect, of the length of the stamina. Stigma thick, five-parted. Ovarium crowned with a white glandular disc, into which the style is inserted.—Berry ovate, villous, five-celled, polyspermous; placenta from the inner angle of the cells.—Jack's Mss.

Obs. by N. W.

Branches as well as the vessels of the leaves densely clothed with soft hairiness; marked with vestiges of the fallen stipules.—Leaves spreading; their base rounded or obscurely retuse; acumen two inches long; shining above; the under side with approximate parallel nerves and reticulate veins; their petiol thick, rounded, scarce-

ly one-third of an inch long, together with the elevated rib very villous.—*Stipules* very deciduous. *Calyx* villous on both sides.—*Corolla* divided almost to the bottom into five petal-like segments.—*Filaments* inserted round the base of the fleshy disc of the ovary, clavate and somewhat thicker at the apex; *anthers* bilocular, apiculate.—*Ovary* minute, five-celled, many-seeded. *Style* cylindric, bifid? *stigmas* simple?—*Berry* almost globular, of the size of a good pea; vertex crowned with the persistent calycine laciniae, and bearing in the centre the elevated vestige of the nectarial disc.—*Dissepiments* very thin. *Seeds* extremely numerous and small, of a deep purple colour, shining, globular, elegantly marked with minute pentagonal pores as in *Pomatium*, Gaert. carp. suppl. 252. t. 225. *Integument* crustaceous.

2. *U. glabrum*, Wall.

Smooth. *Branches* tetragonal. *Calyx* sub-entire.

Native place, Pulo-Penang.

Malay. Loda-Utan.

This species closely resembles the preceding, but is altogether more slender and smooth.—*Branches* four-sided, somewhat dichotomous.—*Leaves* opposite, on short petiols, oblong-elliptic, or lanceolate, about six inches in length, terminating in a linear acumen not so long as in *U. villosum*; smooth on both sides. *Stipules* long, linear, villous. *Capitula* axillary on short peduncles.—*Flower* pedicelled.—*Bractes* small, linear, without any appearance of an involucre.—*Calyx* forming an almost entire margin above the ovary which is crowned with a glandular disc. *Berries* globose, smooth.—Jack's Mss.

*Obs.* The leaves of this species are sub-acute, at the base; their veins are more finely reticulate than in the preceding. *Peduncles* slightly hairy, longer than in that species.

## NONATELIA. Aubl.

*Calyx* short, five-toothed. *Corolla* infundibuliform, with a five-parted, spreading border. *Stamina* attached to the middle of the tube, mostly included. *Berry* underneath, globular, five-celled, five-seeded. *Seeds* hard.

1. *N. hispida*, Wall.

*Leaves* oblong, acuminate, with oblique base, hairy underneath. *Flowers* sessile, axillary, sub-verticillate, with hispid bractes.

Native of Silhet from whence I received specimens in 1815. Time of flowering the hot season.

A shrub with round, smooth, pallid branches, a little compressed at the insertion of the petiols.—*Leaves* opposite, spreading, sub-sessile, longer than their interstices, oblong, finely acuminate, entire, rather broader toward the outer end, base unequal, the one side rounded-sub-retuse, the other narrow and acute, from four to six inches long, coriaceous, smooth above, roughish underneath, which is occasioned by short scattered hairs; with sub-opposite elevated nerves, and transversely reticulate veins; while young thickly covered with bristly articulate hairs, as are also the stipules and bractes.—*Petiols* exceedingly short, hairy, flattish above.—*Stipules* interpetiolar, adpressed, linear-lanceolate, with a broadish base, three or four lines long, hispid.—*Flowers* axillary, sessile, crowded, sub-verticillate, supported by an involucre consisting of numerous linear-lanceolate, erect, acute, hispid, ciliate, three-nerved bractes, which are nearly as long as the corols.—*Calyx* very small, ovate, five-cleft, hairy; *laciniæ* lanceolate, acuminate, erect, persistent.—*Corolla* infundibuliform, white, hispid; *tube* cylindric, slender, nearly an inch long, a little widening at the upper end; *limb* spreading, deeply divided into five linear-oblong, blantish, hairy segments a little shorter than the tube; *throat* pervious, villous.—*Stamina* included; *filaments* capillary, inserted above the middle of the tube; anthers erect, two-celled, hairy under the throat.—*Ovarium* underneath, ovate, small, slightly hairy, five-celled, five-

seeded; ovula erect.—*Style* filiform, smooth. *Stigma* sub-clavate, obtuse, five-lobed, lifted up to the height of the stamina. I have only seen unripe fruits which seem to indicate a small, sub-rotund, five-celled crowned berry, some of the cells perhaps abortive.

*Obs.* Not having seen the ripe fruit I am doubtful whether this shrub in reality belongs to the family under which I have for the present placed it; its crowded, axillary, sub-involucered inflorescence seems to point at a generic difference. It seems nearly allied to *Sabicea*, from which it differs only in the fruit not having many-seeded cells.

### SCHOEPFIA. Schreb.

*Calyx* above, entire, very narrow. *Corolla* infundibuliform. *Ovarium* supported by a calyciform bracte. *Stigma* capitate, three-lobed. *Drupe* with a one- or three-celled putamen. *Seeds* solitary.

#### 1. *S. fragrans*, Wall.

*Leaves* lanceolate, acuminate. *Racemes* axillary, solitary. *Ovarium* three-celled. *Drupe* ovate, one-seeded.

I have found this tree in various parts of Nipal, in less elevated situations, from Becheako, as far as the valley, where it is rather common. It has also been brought to me from more northerly situations. It blossoms during the rainy season, and ripens its fruit from December to March.

#### Parbuteeya, Haloomaphe.

A small tree with an irregular trunk, measuring four or five inches in diameter, covered with thick, spongy, soft, rugose bark, which is of a yellowish white colour; the wood is light ash-coloured.—*Branches* slightly flexuose, round, almost white, like all the other parts perfectly smooth, marked with numerous alternating many-scaled small buds.—*Leaves* scattered, several times longer than their interstices, lanceolate, entire, acuminate, base acute, sides a little unequal, from two to three inches long, somewhat

fleshy and fragile, veinless, shining, dark green above, turning yellowish by age, paler underneath, with a few obscure, oblique, capillary nerves which are slightly reticulate under the margins.—*Petiols* about three lines long, furrowed above, jointed at the base and falling off immediately on being dried.—*Stipules* none.—*Flowers* yellow, exquisitely fragrant, even after being dried, disposed in axillary, simple, solitary, sub-sessile racemes, which are about half the length of the leaves.—*Peduncle* and *rachis* slender, rounded, naked, except at the base, where the former is surrounded by a few bud-scales, which sometimes adscend a little above it, and in that case appear like small, sub-pedicellate, ovate, thick, gibbous bractes. *Pediceles* six or seven, filiform, half an inch long, sub-clavate. *Calyx* double, according to authors; each of them small, one-leaved: one underneath, which I call a *calyciform bracte*, terminating the pedicel and immediately supporting the ovary, divided into two or three unequal, ovate, membrane-margined, acute segments; the largest of which is sometimes two- or three-toothed; the other (true calyx) *above*, crowning the ovary in the shape of an exceedingly narrow, entire margin.—*Corolla* somewhat fleshy, infundibuliform; tube cylindric, nearly half an inch long, with a sub-pentagonal basis; the apex widening into a five-cleft border, whose laciniae are lanceolate, acute, scarcely unequal; *throat* open, marked under the base of each laciniae with a small fascicle of erect succulent hairs, which conceal the filament. *Aestivation* valvate.—*Filaments* exceedingly short, erect, inserted immediately under the above-mentioned fascicle of hairs opposite the laciniae, and from thence decurrent in the shape of capillary lines; *anthers* ovate, erect, bilocular, situated in the throat of the corolla.—*Ovarium* fleshy, oblong, considerably longer than either of the calyces, measuring about three lines, three-celled, three-seeded: *ovula* cylindric, pendulous from the apex of the axis, shorter than the cells; its vertex is covered by a fleshy, conical, obtuse disc, which is prominent within the superior calyx.—*Style* filiform, as long as the tube. *Stigma* clavate, fleshy, three-lobed.—*Drupe* baccate, oblong, obtuse, smooth, pale-yellow, almost white, about the size of a very small olive, supported by the inferior, persistent



calyx, its vertex is convex and surrounded by vestiges of the insertion of the corolla and of the superior calyx, which latter is now reduced to a very obscure margin. *Flesh* soft, about a line in diameter. *Putamen* thin, chartaceous, resembling the drupe in figure, white, veined, with a number of parallel, longitudinal, elevated, anastomosing lines, one-celled, one-seeded; its vertex slightly umbilicated and adhering more firmly to the flesh.—*Perisperm* amygdaline, white, conform to the putamen, its surface slightly rugose, covered by a simple, thin, ferruginous, spongy membrane, on the surface of which, at the upper end of the seed, the two linear abortive ovula are discoverable, and also a vestige of the axis of the ovarium to which they are attached. *Embryo* minute, milk-white, cylindric, straight, situated at the vertex of the perisperm, inverted. *Cotyledons* parallel, lanceolate, obtuse, convex at the back, constituting one-half of the embryo. *Radicula* above, sub-turbinate, its apex about half a line from the surface of the perisperm. *Plumula* inconspicuous.

• *Obs.* Mons. de Jussieu has justly observed in an excellent memoir chiefly on the *Caprifoliaceæ* and *Loranthææ*, inserted in *Annal. du muséum d'histoire naturelle*, xii. 300, that this genus is the connecting link between those families, belonging however, more properly to *Loranthææ*. I would add that it is nearly allied to *Santalaceæ* of Mr. Brown. The account which the first mentioned immortal botanist has given of the fruit, taken from the manuscript of the accurate Richard, as far as it goes, agrees exactly with the present species. The difference of the structure of the ovarium and the fruit has however not been noticed; and as Schreber describes the genus as having a three-celled berry with *several* seeds, the number of abortive ovula may perhaps vary. In my tree there are invariably found three ovula, one of which only comes to maturity, the other two abortive ones remaining attached to the upper end of the cavity of the putamen, as does also the axis of the ovarium, in the shape of withered, flattened threads.—*Haenkea*, Ruiz et Pavon flor. peruv. (haud prodr.) belongs probably to this genus, as has been remarked by Schultes in *syst. veg.* v. viii.—The fruit bears some resemblance

to *Rhysospermum*, Gaert. carp. suppl. 232, t. 224, which is the same as *Notelaea*, Vent. according to Mr. Brown, prodr. nov. holl. i: 523. —The perfume of the flowers is of a most delightful kind, and may be perceived on steeping them in warm water even long after they have been dried.

### LEPTODERMIS, Wall.

*Calyx* above. *Corolla* infundibuliform. *Stamina* short, under the throat.—*Ovarium* within a tubular, two-lobed, *calyx-like bracte*, five-celled, with solitary, erect ovula. *Stigma* five-lobed. *Capsule* five-celled? five-valved? seeds solitary?

Its place in the Linnean system is *Pentandria monogynia*, in the section with superior flowers and five-celled capsules. In the natural arrangement it belongs to *Rubiaceæ*; but its nearest affinities are doubtful as yet in consequence of the fruit not being well known. It is a slender shrub with opposite branches and leaves, and ternate, terminal, sessile flowers.

#### 1. *L. lanceolata*, Wall.

Native of various mountains of Nipal, viz. Sheopore, Ekdunta and others, though it is among the less common plants. I have also had it from more northerly parts. Time of blossoming May and June.

A spreading ramous shrub, from three to four feet high.—*Branches* opposite, sub-decussate, long and slender, obscurely quadrangular, somewhat broader at their divisions and at the insertion of the leaves, covered with ash-coloured, separating, and at length fibrous bark; while young pubescent.—*Leaves* opposite, sub-decussate, spreading, rather approximate on the branchlets, lanceolate, attenuato-acute, entire, short-petioled, membranous, from one to two inches long; base acute; both sides, as also the margins, beset with short, whitish, succulent hairs; the under surface with oblique nerves and reticulate veins.—*Petiols* villous, scarcely two lines long.—*Stipules* interfoliaceous, adpressed, persistent, equalling the petiols in length, broad, triangular, acute, villous.—*Flowers* white, inodorous, sessile, ternate,

terminal on the branchlets, forming a crowded inflorescence at the end of the larger branches; each fascicle is disposed in a rectilinear series.—*Calyx* appears double, as is the case in the preceding genus; one inferior (properly speaking a *calyciform bracte*) consisting of a tubular, thin, greyish, smooth, withering membrane (from whence the generic name is derived) embracing loosely the ovarium and the lower part of the flower; the tube is a little ventricose, the upper end divided into two erect, ovate, ciliate, parallel lobes, each terminated by a short, decurrent cuspis. The inner or *true calyx* is above, concealed within the former, and considerably shorter than that, persistent, five-lobed, reddish; lobes rounded, adpressed to the tube of the corolla, ciliate.—*Corolla* infundibuliform, slightly scabrous on the outside from a multitude of minute papillulæ. *Tube* cylindric, about half an inch long, hairy within, the apex gently widening into the five-cleft, spreading border; *laciniæ* ovate, cuspidate, shorter than the tube, with broadish margins, which at the time of aestivation are *intolute-valvate*.—*Filaments* exceedingly short, inserted immediately below the fissures, alternating with the laciniæ; *anthers* longish, erect, elevated a little above the pervious throat, attached to the filaments by their back, bilocular, whitish.—*Ovarium* oblong, smooth, fleshy; at the upper part it is five-celled, each cell containing an erect, cuneate ovulum. *Style* capillary, as long as the tube. *Stigma* divided into five subulate, longish, diverging, pubescent lobes.—I have only had an opportunity of observing the old and decayed fruit which appeared to have been an oblong, or cylindric, smooth capsule, about half an inch long, divided down to the base into five linear, flat valves, each valve bearing at the apex the corresponding, unaltered lobe of the calyx; there was no vestige of any separate cells, a few withered seeds were attached to the bottom of the cavity.

*COFFEA. Schreb. Gen. N. 314.*

*Corol* funnel-shaped. *Germ* two-celled, one-seeded, attachment of the ovula interior. *Berry* inferior, two-celled, one-seeded. *Seeds* arilled. *Embryo* erect, and furnished with a perisperm.

1. *C. tetrandra*, R.

Shrubby. *Leaves* broad-lanceolar, acute, lucid. *Stipules* bifid. *Peduncles* axillary and terminal, several together, long, slender, one-flowered. *Flowers* tetrandrous. *Corol* with long, slender tube and border

*Beng. Chilmaree.*

An erect, slender, ramous shrub, a native of Silhet, Chittagong, and the whole east border of Bengal, where it flowers in May, and the seeds ripen in October and November.

*Branchlets* opposite, round, smooth, and slender.—*Leaves* opposite, short-petioled, broad-lanceolar, entire, acuminate, smooth, and glossy on both sides; from four to five inches long, and scarcely two broad.—*Stipules* generally bifid; *segments* subulate.—*Peduncles* terminal and axillary, several together, long, slender, straight, one-flowered.—*Calyx* four- or five-toothed.—*Tube* of the corol long, slender, somewhat clavate, smooth; *segments* of the border four or five, length of the tube, ensiform, spreading.—*Filaments* scarcely any. *Anthers* four or five, linear, inserted within the tube, their apices even with its mouth.—*Germ* inferior, turbinate, two-celled, with one *ovule* in each cell, attached to the middle of the partition. *Style* two-cleft. *Stigmas* simple. *Berry* inferior, round, size of a small cherry, smooth, when ripe blackish purple, and with but a small portion of pulp, one- or two-celled, generally one-celled, the other cell being abortive, and then the berry has an oblique direction.—*Seeds* solitary, when the berry is two-celled nearly round; when one-celled, flat on one-side and convex on the other, in which case there is a deep round cavity on the flat side.—*Perisperm* conform to the seed, horny.—*Embryo* erect, very small, and lodged in an oblique direction in the middle of the convex side of the perisperm, with the two reniform *cotyledons* pointing up and in, the oblong radicle out and down.

2. *C. arabica*, Willd. spec. i. 973.

*Leaves* oblong, ovate, acuminate. *Flowers* axillary, crowded. *Stamina* without the tube of the quinquefid corol.

Coffee, Fothergill's Works, ii. p. 279. t. 3.

A native of Arabia, and now common in both Indies. In Bengal it blossoms in March, and the berries ripen in December.

In the West Indies Coffee plants are said to produce on an average from six to sixteen ounces of clear coffee annually. *Fothergill's Works*, ii. p. 323. At St. Domingo they calculate on one pound per plant. At Jamaica one pound and a half, and at Terra-Firma two pounds, where the plants stand in quincunx, at from four to eight feet according to the richness of the soil. *English translation of Depon's Travels in South America*, i. 434. 1809-10. Two middling plants at the age of six or seven years produced in the botanic garden in one year or crop, seven pounds of the dry berries which gave three pounds of clean coffee, equal to the Jamaica produce.

*S. C. bengalensis*, R.\*

Shrubby. *Leaves* opposite, oblong. *Flowers* axillary. *Segments* of the corol oblong. *Filaments* none. *Anthers* long and within the tube.

This is evidently distinct from *C. arabica*. Is found indigenous amongst the mountains of the north-east frontier,† chiefly about Silhet, and from thence brought many years ago to Calcutta where it was for some time much cultivated under the idea of its being the real coffee of Arabia. It is now neglected, being of an inferior quality, and not productive; however the number and beauty of its flowers entitles it to a conspicuous place in the flower garden. Flowering time the beginning of the hot season.

*Root* ramous.—*Trunk* short, and clothed with innumerable, horizontal, opposite branches and branchlets, to the surface of the earth, forming in our gardens, a pyramidical bush of from four to six feet in height.—*Leaves* opposite, sub-sessile, from ovate to oblong; smooth on both sides, obtuse, pointed as in *C. arabica* (both are now before me just taken from the plants,) here are also pores

\* *C. benghalensis* Heyne et Willd.; Syst. Veg. v. 200.—N. W.

† It is indigenous in every part of Bengal. *Ed.*—My people brought it to me from Noakote in Nipal, blossoming in May.—N. W.

in the axils of the nerves on the under side.—*Stipules* within, subulate.—*Flowers* in the axils of the leaves, and of the young shoots, sub-sessile, pure white, generally from one to three, though sometimes more. Margin of the *calyx* crowned with an undetermined number of minute points.—*Corol* contorted; *divisions* of the border oblique, oval.—*Filaments* none. *Anthers* long, linear, within the tube, with their incurved apices just above its mouth.—*Germ* turbinate. *Style* not quite half the length of the tube. *Stigma* two-cleft; *divisions* nearly as long as the style. *Berry* two-seeded, size of a small cherry, when ripe black.

4. *C. pedunculata*, R.

Shrubby. *Leaves* elliptic, sub-sessile, smooth, and entire. *Panicles* terminal, and axillary, many together, long, one-flowered. *Stamina* within the slender, smooth tube of the corol.

A native of the Moluccas.

5. *C. angustifolia*, R.

*Leaves* lanceolate, entire, firm, and polished. *Panicles* axillary, mouth of the corol hairy; *segments* of the border linear, longer than the tube, and about as long as the filiform, exert anthers.

A native of Pigeon Island, one of the Malay archipelago.

*Addition by N. W.*

6. *C. semi-exserta*, Colebr.

*Leaves* oblong-lanceolate, acuminate. *Flowers* crowded in terminal corymbs.

A native of Sillhet.

*Obs.* I know nothing of this species except from an elegant drawing made under the direction of my most esteemed friend and patron H. T. Colebrooke, Esq. and attached to the collection of the botanic garden of Calcutta. It has the appearance of an *Ixora*; the berries are purple of the size of a large pea.

**MORINDA.** Schreb. Gen. N. 317.

*Flowers* aggregate. *Calyx* superior, five-toothed. *Corol* funnel-shaped. *Germ* from two to four-celled; *cells* one or two-seeded, attachment interior. *Stigma* two-cleft. *Berries* aggregate. *Embryo* erect, and furnished with a persperm.

1. *M. citrifolia*, Willd. i. Spec. 992.—Gart. carp. i. 144. t. 29.\*

Arboreous, with a straight trunk. *Leaves* oblong, lucid. *Peduncles* on the upper side of the branchlets, solitary, opposite to every other solitary leaf, with a pair between. *Anthers* half hid in the mouth of the tube. *Fruit* ovate, glossy, white.

*Cada-pilava*, Rheed. mal. i. 97. t. 52. (good.)

*Banducus latifolia*, Rumph. amb. iii. 158. t. 99.

An elegant small tree, with straight trunk, and numerous, decussated, assurgent branches, a position they generally take from the weight of the fruit, and constant exuberant foliage. From Pegu it has been introduced into the Botanic Garden at Calcutta, where it is in constant fruit, and flower the whole year. It does not appear to be a native of Bengal nor did I ever meet with it on the coast of Coromandel; but the species which I formerly considered as *citrifolia* is common in both countries, and the description and drawings thereof were sent to the honorable the court of directors. That species, which however is quite distinct, I now call *tinctoria*, as it is the sort most in use for dying.

*Bark* of young trees, or their trunk, light ash-coloured and smooth; young shoots somewhat four-cornered, smooth and lucid.—*Leaves* opposite to each other, or to a peduncle, short-petioled, from oblong to oval, lucid, entire, rather obtuse; from five to ten inches long, and from three to five broad.—*Stipules* large, semilunar, entire, smooth. *Peduncles* solitary, opposite to a solitary leaf on the upper side of the branchlets, erect, short, cylindric, smooth, each supporting a small aggregate head of small white flowers.—*Calyx* an entire margin

\* Loureir. cochinch. i. 174.—N. W.

round the apex of the germ.—*Corol* funnel-shaped; *mouth* of the tube hairy. *Border* five-parted, segments lanceolate, acute.—*Filaments* five, woolly, inserted into the tube of the corol, a little above its middle. *Anthers* linear, erect, half hid in the tube.—*Germ*s firmly united, single, two-celled, each cell containing two *ovula*, attached to opposite ends of the wings of the large, thick, fleshy partition.<sup>1</sup> *Style* length of the tube of the corol. *Stigma* two-cleft.—*Berries* compound, size of a pullet's egg or even longer, obtuse, when ripe pale white, polished, and succulent, as described and figured by Gaertner.

*Obs.* Its roots are employed by the natives like those of several other species to dye red.

2. *M. tinctoria*, R.\*

*Leaves* oblong, sub-sessile, opposite to each other, or to the solitary one-flowered peduncles. *Stamina* enclosed; *stigma* exsert.

*Sung.* अचूत, Uchyoota.

*Hind. and Beng.* Ach; see *Asiat Res.* iv. 35—44.

*Teling.* Tagaroo.

This small tree I have found pretty common in every part of India, where I have been. It is in flower and fruit most part, if not the whole year.

*Trunk* seldom straight, and only a few feet in height, but supporting a pretty large, ramous, shady head. *Bark* covered with an ash-coloured, deeply-cracked, corky crust.—*Leaves* opposite, except where there is a peduncle, in that case, solitary, the peduncle occupying the place of the other leaf, short-petioled, oblong, entire, smooth on both sides, but not lucid like *citrifolia*, pale underneath, from six to ten inches long.—*Stipules* within the leaves, as in the other *Rubiaceæ*.—*Peduncles* leaf-opposite, expanding, about an inch long, supporting an oval head of aggregate, pure white, Jasmine-like, fragrant flowers.—*Calyx* as in the genus. The com-

\* This is perhaps the plant to which Sir J. E. Smith alludes in Rees's Cyclop. in loco, as having been sent to him by Dr. Roxburgh for *M. citrifolia*.—N. W.



pound fruit is well described by Gaertner in his description and figures of *M. citrifolia*.

*Obs.* The bark of the roots is used to dye red, the colour is fixed with alum, but it is neither bright nor durable. In some parts of India it is cultivated for the sake of the roots; see *Asiat. Res.* iv. In the Circars the dyers use the bark of the fresh roots bruised and gently boiled in water for a short time, the cloth or yarn is prepared in a cold infusion of the powdered galls of *Terminalla Chebula*, in milk and water, it is then dried and moistened with alum water, and again dried, and receives from the above decoction, a pretty bright, but fugitive red.

The green fruits are picked by the Hindoos, and eaten with their curries. The wood is hard and very durable, variegated with red and white, it is employed for Gun-stocks in preference to all other kinds.

### 3. *M. bracteata*, R.

Arboreous, straight. *Leaves* opposite to each other or to a peduncle, oblong, polished. *Anthers* within the woolly mouth of the tube. *Stigma* exsert. *Heads* bracted.

*Bancudus angustifolia*, *Rumph. amb.* iii. p. 157. t. 98. has the process of the calyx of my plant, but I cannot say they agree in other respects.

Is a native of the Ganjam district from thence Mr. Snodgrass sent the seeds to the Botanic Garden at Calcutta, where the tree thrives well, and is in blossom during the hot and rainy seasons.

*Trunk* straight. *Branches* opposite, decussate, smooth.—*Leaves* opposite to each other or to a peduncle, short-petioled, oblong, acute, smooth, polished, deep green on both sides, margins entire, length from six to twelve inches.—*Stipules* large, with semicircular apices.—*Peduncles* solitary, and always opposite to a leaf, round, smooth, from one to two inches long, supporting a single, small head, of small pure white flowers. In *tinctoria* and *exserta* the peduncle is often in the axil of a small leaf, which stands opposed to the large one.—*Calyx*. *Perianth* proper a tumid margin round the crown

of the germ, frequently a small portion thereof grows to be a long linear-lanceolate, permanent leaflet.—*Corol* funnel-shaped; *mouth* of the *tube* very woolly.—*Filaments* short. *Anthers* linear, lodged amongst the wool, but entirely within the mouth of the tube.—*Stigma* two-cleft, and elevated above the mouth of the tube.—*Berry* aggregate, size varying from that of a crab-apple, to that of a small nutmeg, single berries several, obovate, size of a pea with a round eye on the apex.—*Nut* or seeds four, the shell or cover uniformly convex on the out side, and on the inside concave, with an elevated convexity near the top which covers a void cell, the fertile cell occupies the whole length, and nearly the whole breadth of the nut, (for so I may call the hard, smooth, brown integument of which it is formed,) but is much compressed.

*Obs.* I have not learned that the root of this species is used in dying, but have no doubt of its possessing qualities similar to the roots of all the other species of the genus that I have yet met with.

#### 4. *M. exserta*, R.

Arboreous. *Leaves* opposite to each other or to a peduncle, ovate, pointed. *Stamens* above the tube. *Stigma* rather within.

*Beng.* Bun-autch, or Bun-aal.

A tree of rather small stature; a native of Bengal. Flowering time the hot and rainy season; seed ripe in about twelve or thirteen months afterwards.

*Trunk* from six to twelve feet high, often variously bent, and covered with deep cracked, spongy, ash-coloured bark. *Branches* spreading in every direction; *branchlets* opposite, smooth; *young shoots* somewhat four-sided, in some plants smooth, in others villous.—*Leaves* opposite, short-petioled, oval, or ventricose-oval, pointed, margins entire, but waved; in some plants smooth, of a deep shining green on both sides; in others downy, from four to six inches long, and from three to four broad.—*Stipules* interfoliaceous, entire, emarginate or bifid.—*Peduncles* generally solitary, though sometimes there are two together, leaf-opposed, or in the axil of a small leaf, opposed to one of the usual size, round, smooth, about an inch long, each

supporting a round aggregate head of many pure white, jasmine-like flowers. In very luxuriant young plants I have found the peduncles two- or even three-cleft, with a head of flowers on each division.—*Calyx* scarcely any.—*Corol* funnel-shaped. *Border* of five, equal, lanceolate, fleshy, expanding divisions.—*Filaments* inserted on the mouth of the tube, in the division of its margin; erect. *Anthers* linear. *Germ* beneath, four-celled, with one *ovule*. *Style* length of the tube of the corol. *Stigma* even with its mouth and two-cleft.—*Berry* (rather drupe) aggregate, oval.—*Seeds* or nut regularly four and distinct to each proper berry, forming a square, inserted pyramid, each one-seeded. Here the abortive cell is scarcely visible.

*Obs.* This species is immediately known by its exsert stamens, half-concealed stigma, and broad-pointed leaves. In all the other species figured and described by me, viz. *citrifolia*, *tinctoria*, *bracteata*, *multiflora*, and *angustiflora* the stamens are enclosed, and the style exserted.

### 5. *M. multiflora*, R.

Sub-arboreous. *Leaves* opposite, oblong-ventricose, downy. *Peduncles* terminal and leaf-opposed, compound. *Anthers* within; *stigma* exsert.

*Ad* the vernacular name at Nagpore.

A native of Berar. From Nagpore the seed was sent by Mr. Colebrooke, Resident at the Court of Rughojee Bunsia, to the Botanic Garden at Calcutta in 1801. By the close of the same year the plants were in blossom, and in one year more they have grown to large ramous shrubs, and now in eight years they are small trees and in constant flower; I may farther remark that notwithstanding all the other four species of *Morinda* already described and figured by me, grow to be small trees, they generally blossom the first year of their growth if the soil is good and the plants taken good care of.

*Leaves* very short-petioled, opposite, or opposite to a peduncle, oval, tapering at each end, acute, margins waved; downy on both sides, particularly underneath; from four to six inches long, and from

two to three broad.—*Stipules* interfoliaceous.—*Peduncles* variously disposed, viz. axillary, opposite to a leaf, and terminal, one or more from the same place, and often compound; round, villous, from two to four inches long.—*Heads* sub-globular, many-flowered.—*Receptacles*, *calyx* and *corol* as in the genus. *Filaments* short. *Anthers* linear, their apices even with the mouth of the tube of the corol.—*Stigma* two-cleft, and extended considerably beyond the anthers.—*Berry*, rather *drup*, aggregate, ovate-oblong; surface very unequal, size of a large mulberry.—*Seeds* or *nuts* regularly four to each proper berry or drupe of the compound fruit, obliquely wedge-shaped; three-celled, two of them empty, the third with a single seed, as accurately described and figured by Gaertner in *Morinda citrifolia*.

*Obs.* The plant is cultivated about Nagpore as the other species are in various other parts of India, and for the same purpose (see *Asiat. Res.* iv. 35—44.)

#### 6. *M. angustifolia*, R.

Shrubby, erect. *Leaves* opposite to each other or to a peduncle, lanceolar, bullate. *Heads* solitary. *Flowers* numerous. *Anthers* concealed deep within the tube; *stigma* exsert. *Berries* distinct, on a glomerate receptacle, succulent, four-seeded.

An erect, thinly branched shrub, was found at Chittagong by Dr. Buchanan, and from thence sent to the Botanic Garden at Calcutta in 1798, where it blossoms in March, and the seeds ripen in May.

*Trunk* straight, with a few erect branches. *Bark* light ash-coloured; height of the whole plant about four or five feet.—*Leaves* opposite, or single when a peduncle occupies the place of the other, sub-sessile, recurved, lanceolate, bullate, smooth, entire, about six inches long and less than two wide. *Stipules* opposite, sub-cordate, interfoliaceous, united into a ring and remaining long after their respective leaves drop. *Peduncles* solitary, short, seemingly terminal when they begin to blossom, but soon after the branchlet shoots out from between each peduncle and its respective opposite leaf

which marks their proper situation to be *oppositifolius*.—*Heads* solitary, globular, many, viz. from fifty- to a hundred-flowered.—*Flowers* pure white, in size and shape like those of the common *Jasmine*. *Calyx* merely an almost entire, marginal ring round the base of the tube of the corol.—*Corol* funnel-shaped.—*Filaments* short, inserted rather below the middle of the tube of the corol. *Anthers* linear, hid in the middle of the tube.—*Stigma* exsert, two-lobed. *Berries* in general distinct, but a small proportion of them only comes to perfection, sessile, the size of a large pea, succulent, deep shining black, with very dark-coloured pulp.—*Seeds* four; each two-celled, with the inner cell large and empty.

*Obs.* The root of this shrub is also used in dying by the natives of India where the plant is in plenty.

#### 7. *M. scandens*, R.\*

Shrubby, scandent; *leaves* oblong, lanceolate. *Umbells* terminal, simple, berries round, three or six-seeded.

A stout scandent shrub of several fathoms in extent, found common in the hills which form the east side of point de Galle Bay or harbour. In flower and fruit in March, (1813.)

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The following descriptions of two interesting new species discovered by my late, much lamented friend Mr. W. Jack,† are added from the *Malayan Miscellanies*, vol. i.—N. W.

\* This plant was discovered by Dr. Roxburgh on his last voyage to England, and the accompanying short description was sent to me from Ceylon. *Ed.*

† I was in hopes of meeting again with this most indefatigable and zealous Naturalist at Singapore last year, when I was obliged to visit that island on account of a severe fever which I had contracted on my way down to the plains from Nipal. But it was otherwise ordained; and I have now to claim the sympathy of the reader while I indulge a moment in rendering a feeble tribute of respect and friendship to his memory, leaving it to the pen of Sir Stamford Raffles, the revered friend and patron of us both, to do it far ampler justice.—During Mr. Jack's short and unostentatious, but highly useful and meritorious career, his comprehensive mind extended to every branch, almost, of moral and physical science,

8. *M. tetrandra*, W. J.

Tetrandrous. *Peduncles* terminal, umbellate. *Corols* four-cleft, hairy within. *Leaves* lanceolate.

*Pada-Vara*, Rheed. mal. vii. 51. t. 27.

Native of the Malay Islands.

*Mangkudu Kicheel*, Malay.

A small diffuse shrub, with long slender branches, nodose at the bifurcations. *Leaves* opposite, short-petioled, lanceolate, acuminate, very entire, very smooth, the nerves reddish below, and furnished with ciliated glands in the axils.—*Stipules* interpetiolar, truncate.—*Peduncles* from five to ten, umbellate, terminal.—*Flowers* aggregate on a common receptacle. *Calyx*, an entire margin crowning the ovary. *Corolla* infundibuliform, four-parted, the laciniæ densely covered within with long white hairs.—*Stamina* four, shorter than the corolla, and alternating with its divisions; *filaments* very short; *anthers* oblong. *Ovary* inferior, two-celled, four-seeded. *Stigma* bifid. *Fruit* sub-globose, yellow, composed of coadunate berries, angular by their mutual compression, crowned with the vestige of the calyx, four-seeded; *seeds* osseous.

*Obs.* Rheede describes his *Pada-Vara* to be fourteen feet in height; this is the only particular in which it differs from my plant. In every other respect they agree exactly.—*W. Jack, loc. cit.*

*Additional Obs. by N. W.*

Rheede's plant has been considered by Jussieu as a species of this genus, in *Mem. du mus.* vi. 402. In Schultes's edition of *syst. veg.* v. 216 the species is called *M. Pada Vara*; in Dennstedt's key to the *Hortus malabaricus* it is referred to *M. umbellata*.—Can *M. Royoc*, Linn. *Lour. cochinch.* be this species?

science, with a degree of success, which the world has ample opportunities of appreciating, from his numerous valuable contributions to the common stock of information, both printed and in manuscript. To his family and friends the loss of such a man is indeed irreparable; nor can it be replaced to the public, but by an equally fortunate combination of first rate talents, with the utmost suavity of temper and urbanity of manners.—N. W.

9. *M. polysperma*, W. J.

Tetrandrous. *Peduncles* axillary and terminal. *Corols* four-cleft, hairy within. *Leaves* ovate, acuminate. *Berries* two-celled, many-seeded.

Found in the Island of Singapore.

A shrub, with short, sub-dichotomous, flexuose branches. *Leaves* opposite, petiolate, ovate, acuminate, obtuse at the base, very smooth, coriaceous, flat, about three inches long. *Stipules* short, interpetiolar. *Peduncles* axillary and terminal; axillary ones opposite; terminal ones from one to four in a kind of umbel. *Capitula* few-flowered. *Calyx*, an entire margin. *Corolla* infundibuliform, four-parted, densely covered within with white hairs. *Stamina* four, shorter than the corolla; *filaments* short; *anthers* linear, style erect. *Stigma* bifid. *Berries* coadunate, two-celled, many-seeded! *Seeds* numerous, angular.

*Obs.* The flowers of this species are perfectly similar to those of the preceding, but the fruit presents a singular anomaly in being polyspermous. Both differ so much from the other species of *Morinda* that I think they might properly constitute a new and distinct genus.—*W. Jack, l. cit.*

*Note by N. W.*

I have met with this singular species in abundance near the sea-shore, some miles from the town of Singapore. It is a large climber, running over shrubs and even small trees; its branches are sometimes radicans.

*LORANTHUS*,\* *Schreb. Gen. 600.*

*Calyx* uncertain. *Corol* generally one-petalled, and often irregular. *Germ* inferior, one-celled, one-seeded, attachment superior. *Berry* one-seeded. *Embryo* inverse, and furnished with a perisperm.

\* This Genus is usually placed in *Hexandria monogynia*, but as Dr. Roxburgh in the last copy he made of the *Flora Indica*, before he left this country, removed it to *Pentandria*, it is printed where he then placed it. *Ed.*

1. *L. bicolor*, Roxb. *Corom.* ii. 19. tab. 139.

*Leaves* opposite; oblong, smooth. *Racemes* axillary. *Corols* irregular, five-cleft. *Stamens* five. *Berry* oblong.

*Sung.* वन्दा, Vunda,\* वृक्षादनी, Vrikshadunee, वृक्षमन्दा, Vrikshabhuksha, and वृक्षरूपा, Vrikshurooha.

*Hind.* and *Beng.* Bura-manda.

Yellinga-wadinika of the Telingas; (*wadinika* means parasitical.)

Is always found growing upon the branches of various kinds of trees, and is very ramous. Flowers during the greatest part of the year, and is highly ornamental.†

*Trunk* scarcely any. *Branches* numerous, ascending, woody; bark grey.—*Leaves* nearly opposite, sessile, or very short-petioled, from oval to linear-lanceolate, waved, entire, reclined, veins scarcely any; from three to five inches long, and from half an inch to an inch and half broad. *Racemes* axillary, single, simple, sub-erect, many-flowered.—*Flowers* in size and appearance very much like those of the honey suckle. *Bractes*, a small, concave, cordate one, pressing on the base of the germs on one side.—*Calyx*, there is no other *perianth* of the fruit than the above-mentioned bracte; that of the flower is cup-shaped, entire, permanent.—*Corol* one-petalled. *Tube* long, a little curved, swelling from the bottom to within a third of the mouth, then contracting a little; *border* five-parted, upper fissures much the deepest; *segments* linear, reflexed towards one side.—*Filaments* five, from the base of the segments of the corol, short. *Antthers* linear.—*Germ* inferior, naked. *Style* length of the corol. *Stigma* clubbed. *Berry* inferior, crowned with the remaining calyx, oblong, smooth, pulpy, one-celled.—*Seeds* single.

*Obs.* This is a handsome looking parasite, bearing a great number of very beautiful flowers; its foliage also looks very well. All

\* Sir William Jones thought Vunda to be the general term for all parasitic plants. It is probable that all the names here cited are so. *Ed.*

† It is one of the most common plants in Bengal, where it is chiefly found growing on mangoe trees, frequently in such abundance as to disfigure them, and to be with difficulty rooted out. At Silhet it is called *Pat-rem* and is in great repute as a remedy against venereal complaints.—N. W.



that part of the branch of the tree above where it grows, becomes sickly and soon perishes.

It should be compared with *L. longiflorus*. It differs from Gaertner's *Lonicera zeylanica* in not having the calyx of the fruit, and in having only five parts in the corol; but in the racemes they agree. I cannot reconcile it with *L. falcatus* of Linneus's *supplementum*, nor with *L. loniceroides*, Linn. for here the inflorescence bears no resemblance to an involucred umbel. Neither can it be *L. pentandrus*, as there the leaves are alternate, with petiols nearly as long as the racemes; in short I cannot well reconcile it to any of the hitherto described species. It unites the two genera of *Loranthus* and *Lonicera*.—In Bengal I have found it with leaves from five to six inches long, and four or five broad.

2. *L. Scurrula*, Willd. spec. ii. 232.—Roxb. Corom. ii. 19. tab. 140.

*Leaves* opposite, ovate, underneath downy. *Flowers* axillary, fascicled. *Corol* irregular, four-cleft; *stamens* four. *Berries* turbinate. The Telingas have no other name for this than *Wadinika*.

It is also a parasitical shrub, but considerably smaller than the last and much more scarce; grows upon branches of trees in the same manner. Flowers during the wet season.

*Leaves* opposite, petioled, cordate, scalloped, covered with soft, white down underneath; about two inches long, and one and half broad.—*Peduncles* numerous, collected in the axils, one- or more-flowered.—*Flowers* considerably smaller than in the last species, of a rusty grey colour, and covered with grey farinaceous dust.—*Bractes* one, pressing on the germ as in the last. *Calyx* of the fruit no other than the bracte of the flower, as in the former.—*Corol* one-petalled; *tube* swelled towards the base.—*Border* four-parted, upper fissure deepest; *division* linear, reflexed; *stamens* four, the *pistil* as in the last species.—*Berry* top-shaped, one-seeded.

3. *L. globosus*, R.

*Leaves* opposite, oblong, smooth; *spikes* axillary. *Corols* regular, six-cleft. *Berries* round, oval.

*Kanneli-itti-kanni, Rheed. mal. x. 9. tab. 5.*

*Beng. Chhota-manda.*

A ramous shrubby parasitic, like the two species already described; grows common on trees throughout Bengal. Flowers all the year.

*Leaves* generally opposite, though sometimes alternate, and also three-fold, short-petioled, oblong, smooth, entire, of a thick leathery texture, almost veinless; from two to three inches long.—*Racemes*, or rather spikes, axillary, or between the leaves, or from the old axils, generally solitary, though sometimes there are two or even three together, much shorter than the leaves. *Flowers* opposite, from three to six pairs on the spike, sessile, small, greenish orange colour.—*Bractes* no other than the perianth of the fruit.—*Calyx*. *Perianth* of the fruit inferior, two-leaved, the under and exterior cordate, the inner two-toothed; that of the flower no other than the circular margin of the pit which receives the flower.—*Corol* one-petalled; *tube* gibbous, six-sided. *Border* six-parted, divisions alike, and cut equally deep, reflected.—*Filaments* six, erect, inserted into the base of the divisions of the corol.—*Germ* ovate. *Style* the length of the stamens. *Stigma* large, glandular, navelled.—*Berry* inferior, round-oval, size of a pea, smooth, when ripe the pulp is yellow, clammy, and elastic, which makes them adhere to the branches of trees where they germinate, resting on three permanent calyciform bractes and crowned with a ring where the corol stood round the permanent base of the style, one-celled.—*Seeds* solitary, conform to the berry. *Integument* single, white, tough and clammy, marked with twelve whitish striæ.—*Perisperm* conform to the seed, six-grooved, green.—*Embryo* central, inverse, straight, pale green, nearly as long as the perisperm.—*Cotyledons* two, linear-oblong.—*Plumula* minute. *Radicle* sub-cylindric, length of the cotyledons, superior.

#### 4. *L. ferrugineus, R.*

Young *shoots* as well as the underside of the oval *leaves* long, slender, tetrandrous, regular; *flower*, *fruit*, and *pedicels* clothed with much ferruginous pubescence.

Found by Mr. W. Roxburgh growing on trees in the forests of Pulo-Penang.

*Addition by N. W.*

I have found this species growing abundantly on trees on the islands of Penang and Singapore, blossoming in August—December. It was found also at Sumatra by the late Mr. Jack, whose description I insert here from the *Malayan Miscellanies*, vol. i. p. 9.

"A parasitic shrub which attaches itself firmly to the branches of trees by means of long runners and numerous circular bands. The branches are long and hanging, and when young densely covered with reddish ferruginous wool. Leaves opposite, short petioled, coriaceous, elliptic, obtuse, entire, smooth and green above, ferruginous and densely villous beneath. Stipules none. Peduncles fascicled, from one to four in each axil, from two to six-flowered. A small scale-like bracte embraces the base of the ovary. Calyx (if any) an entire margin crowning the ovarium. Corolla covered externally as well as the peduncles and ovary with ferruginous tomentum, green and smooth within, tubular, divisible into four petals, which commonly adhere at their base but separate at the limb, which is generally more deeply cloven on one side. Stamina four, inserted into the tube and nearly as long as the limb. Filaments flat, deep purple. Style as long as the corolla. Stigma sub-rotund. Berry ovate, ferruginous, one-seeded."

5 *L. involucratus*, R.

Leaves opposite, ovate-cordate, smooth. Umbellets axillary. Involucres four-leaved, four-flowered; flowers regular, pentandrous.

A stout parasitical shrub, found on trees in the forests on the eastern border of Bengal, where it blossoms great part of the year.

Branches while young clothed with smooth, shining, dark-brown bark.—Leaves opposite, short-petioled, ovate and ovate-cordate, sides often unequal, as in most of the plants of this genus, entire, smooth on both sides; from three to four inches long.—Umbellets

axillary, crowded, sub-sessile, much shorter than the leaves.—*Involucres* four-leaved, four-flowered; *leaflets* ovate-lanceolate, smooth, entire.—*Flowers* sessile, pretty large, equalling the involucre.—*Calyx* superior, short, five-toothed, villous.—*Corol*; *tube* widening toward the mouth, villous. *Border* regular, five-parted; *segments* linear, revolute.—*Filaments* equalling the segments of the corol, and inserted on them below their middle. *Anthers* oval.—*Germ* oval, sericeous. *Style* rather longer than the corol. *Stigma* two-lobed.

*Obs. by N. W.*

In the numerous specimens of this remarkable plant which I have received from Silhet, where it is called Chhota-gurool, the young branches and leaves are covered with pale ferruginous soft hairs; the sessile involucres, too, are slightly villous.—N. W.

6. *L. ampullaceus*, R.

*Leaves* opposite, oblong, polished. *Racemes* axillary, simple. *Flowers* calyced, regular, hexandrous; *tube* of the corol gibbous. *Berries* long, oval.

Found on trees in the forests of Silhet, but seems to prefer the Mango tree to all others. Flowers in the dry season, probably the whole year round.

*Stems* as in our other Indian species, the size and shape very uncertain, but numerous, bifid, trifid or quadrifid, smooth; *branches* and *branchlets* spread in all directions.—*Leaves* opposite, short-petioled, oblong, entire, smooth, from three to four inches long, and generally less than two in breadth.—*Racemes* axillary, solitary, or in pairs, much shorter than the leaves.—*Flowers* opposite, short-pedicelled, pretty large, greenish yellow.—*Bractes* oval, one at the base of each pedicel, and two pressing the base of the germ like an inferior, bilabiate calyx.—*Calyx* superior, entire, rotate.—*Corol* regular; *tube* gibbous; *border* six-cleft; *divisions* revolute, somewhat spatulate.—*Filaments* six, from the mouth of the tube of the

corol, length of its segments. *Anthers* ovate.—*Germ* inferior, one-celled, and containing one ovule attached to the top of the cell. *Style* longer than the corol. *Stigma* large.—*Berry* inferior, long-oval, smooth, yellow, size of a currant, one-celled. *Pulp* pale yellow, very clammy.—*Seeds* solitary, ovate. *Integuments* two; *exterior* marked with six longitudinal fibres; *inner* membranaceous.—*Perisperm* conform to the seed, six-grooved, green.—*Embryo* cylindric, inverse. *Cotyledons* short, semi-cylindric. *Radicle* cylindric, with a turbinate apex rising above the perisperm, inverse.

*Obs. by N. W.*

I have had numerous specimens from Silhet where the plant is called *Am-puraro* (*Mango-parasite*, *Am* signifying the mango tree and *puraro* parasitical.) They differ somewhat from the description, still as they agree in most parts, I am unwilling to add to the difficulties of this genus by attempting to constitute them into a new species.—*Stem* and *branches* covered with smooth greyish white bark.—*Leaves* from ovate-lanceolate to ovate, finely acuminate, very smooth, as are all the other parts, from four to five inches long, coriaceous, remarkably shining above, venous when dry, especially near the margins where (as is the case in the whole family) the nerves unite in reticulate arches; they are less liable to fall off on being dried than those of most of the other species.—*Racemes* frequently many in each axil.—*Bractes* two, opposite, ovate, shorter than the ovary; one of them is acute, its margins sub-decurrent on the pedicel; the other obtuse, two-lobed. There are no bractes under the pedicels.—*Calyx* obscurely five-lobed.—*Corol* about an inch long, before expansion bottle-shaped, its lower half being large, somewhat ventricose; the upper half narrow, six-sided, with a rounded apex, scabrous from a number of small dots. All the rest as in Roxburgh's plant.

7. *L. clavatus*, R.

*Leaves* opposite, broad-lanceolate. *Flowers* axillary, few together, tetrandrous; *corols* irregular, four-cleft; *berries* clavate.

A delicate, shrubby parasite ; found in the Silhet district growing on *Azerrhoa Carambola*.

8. *L. pentapetalus*, R.

*Leaves* opposite, from lanceolate to oval-cordate, and obliquely attenuate, smooth. *Racemes* axillary. *Flowers* pentandrous ; *petals* five, with enlarged, three-sided base.

A large, very ramous, shrubby plant, found growing on various trees in the forests of Silhet. Flowers appearing about the beginning of the rains in June.

*Branches* and *branchlets* columnar and quite smooth.—*Leaves* opposite, petioled, from lanceolate to ovate-cordate, obliquely attenuate from the middle to the apex, entire, smooth, from three to four inches long, and about two broad.—*Racemes* axillary, solitary, or paired, straight, simple, often as long as the leaves, smooth.—*Flowers* very numerous, short-pedicelled, small, scattered, red.—*Bractes* ; an obliquely oval one embraces the base of the germ on the outside.—*Calyx* superior, rather small, sub-entire, smooth.—*Petals* five, the base of each swelled out into a fleshy, three-sided body, giving to the bottom of the corol a globular form and meeting in the centre, leaving only a small aperture for the style ; above tongue-shaped, and recurved.—*Filaments* five, inserted on the petals ; *anthers* obovate.—*Germ* oblong, one-celled, and containing one ovule, pendulous from the top of the cell. *Style* four-sided, jointed, or appearing so near the middle. *Stigma* a little enlarged. *Berries* oblong, smooth, greenish-yellow, one-seeded.

*Addition by N. W.*

While I was in Nipal I received perfectly fresh specimens of this exceedingly beautiful species from the valley of Noakote, where it blossoms in February and March ; they agree in every respect with those from Silhet. Younger *branches* alternately compressed.—

*Leaves* tough and coriaceous, shining and somewhat vascular above, pale underneath with a keeled rib, of a brownish colour with purplish unequally repand margins. *Petiol* slender, furrowed, half an inch long. *Racemes* from six to eight inches long, often two or three in each axilla, cylindric, as thick as a small finger, of a scarlet colour in all their parts, short-peduncled, somewhat fleshy, at first erect, spreading more and more as the flowers expand, sometimes with a small floral leaflet at the base. *Rachis* thick, fleshy, slightly angular, scabrous, furrowed. Before expansion the *flowers* are cylindric, erect on their short thick pedicels, or ascending so as to be parallel and close to the rachis, sub-verticillate and approximate; as they open they become paired or scattered, spreading, somewhat remote; they are scentless, about five lines long.—*Filaments* subulate, spungy; their lower half attached to the petal, which they scarcely equal in length.



### *Additional Species by N. W.*

#### 9. *L. retusus*, W. J.

“*Leaves* opposite, obovate-oblong, retuse or emarginate; *racemes* sub-solitary, limb of the corolla shorter than the clavate tube.

Found at Singapore.

Parasitic on trees, and fastening itself by long runners. *Bark* brown.—*Leaves* opposite, short-petioled, obcuneate, or oblong-obovate, retuse or emarginate, entire, smooth, coriaceous; *nerves* indistinct; about three inches long. *Racemes* below the leaves from the former axils, short.—*Flowers* pedicelled with one or two bractes at the base.—*Calyx* consisting of an entire margin. *Tube* of the corolla clavate, gibbous and angled above, rosy, suddenly contracted at the limb, which is five- or six-parted, yellowish green; *segments* narrow-lanceolate, reflexed, shorter than the tube. *Stamina* six,

sometimes five, erect. *Style* a little longer than the stamina. *Stigma* capitate. *Berry* one-seeded."—*IV. Jack's Mss.\**

10. *L. cylindricus*, *W. J.*

"*Leaves* alternate, petioled, lanceolate, acute at both ends; *racemes* axillary, as long as the leaves, limb of the corolla much longer than the cylindrical tube.

*Kayo Tiong*; Malay.

Found in Sumatra.

*Branches* woody, straight, with dark coloured bark.—*Leaves* alternate, rather long-petioled, lanceolate, acute at both ends, entire, smooth, nerved; four or five inches long. *Petiols* about an inch in length. *Racemes* axillary, as long as the leaves, rigid; *flowers* pedicellate-divaricate, rather distant from each other, so that the whole has an open stiff appearance. *Bractes* one, embracing the base of the ovary on its outer side.—*Calyx* rather distinct, nearly entire. *Corolla* red, perfectly cylindrical before expansion, five-petalled; *limb* reflexed, three times as long as the tube; *petals* linear, separating almost to the base. *Stamina* five, inserted on the petals, and nearly as long. *Style* filiform, erect. *Stigma* small. *Ovary* cylindrical, one-seeded.

*Obs.* This is a well marked species having somewhat the habit of a *Rhopala* in its inflorescence and cylindrical flowers, which are sometimes tetrandrous."—*IV. Jack's Mss.*

11. *L. incarnatus*, *W. J.\**

"*Pentandrous*; young leaves and branchlets covered with deciduous, stellate pubescence; *leaves* alternate, broad-ovate, acute; *racemes* below the leaves, hoary; *calyx* five-toothed; *limb* of the *corolla* much shorter than the tube.

Found on the island of Pulo Nias.

\* The leaves vary much in size and figure; they are often rounded at the apex. It is common at Singapore, where I gathered specimens in flower in September.—*N. W.*



Parasitic on trees. All the young parts covered with stellate pubescence which is easily rubbed off. *Leaves* alternate, petiolate, broad-ovate, attenuated upwards, acute, entire, smooth when adult, nerves strong and distinct; nine inches long. *Petioles* short. *Racemes* from the stem below the leaf-bearing branchlets, generally several together, sometimes solitary. *Flowers* nearly sessile. A small bract at the base of the ovary. *Peduncles*, *ovaries* and *calyces* hoary with short dense wool. *Calyx* superior, distinctly five-toothed. *Corolla* above two inches long, slightly tomentose without, pale rosy with a greenish limb; *tube* gibbous below, contracted a little above the base, then widening upwards till it suffers a second contraction before expanding into the limb, which is about a fourth the length of the tube, five-parted, with reflexed segments. *Stamina* five, erect. *Style* longer than the stamina. *Stigma* clavate. *Berry* crowned with the calyx, hoary, and mealy, ovate, one-seeded.

*Obs.* This beautiful species comes nearest to *L. farinosa*, Lam. but differs in the pubescence of the young leaves and branches and the much greater length of the tube of the corolla."—*W. Jack's Mss.*

12. *L. patulus*, *W. J.*

"*Leaves* opposite, elliptic-ovate, smooth; *flowers* on long pedicels, paniculate-racemose, axillary or below the leaves; *tube* of the corol acutely six-angled, equal in length to the segments of the limb.

Found in the interior of Bencoolen.

*Branches* smooth.—*Leaves* opposite, petioled, elliptic-ovate, rather obtuse, sometimes sub-acute, entire, smooth, coriaceous; about three inches long.—*Flowers* paniculate-racemose on long divaricate pedicels, axillary or below the leaves. The racemes are shorter than the leaves from which they spring. *Bractes* two or three, embracing the ovary like a calycle. *Calyx* an entire margin. *Corolla* green, tipped with light red and with a purplish tinge towards the base, tube clavate, dilated upwards, acutely six-angled; *limb* six-parted, segments as long as the tube, narrow, revolute. *Stamina* six, erect.

*Style* as long as the *stamina*. *Stigma* capitate. *Berry* sub-globose, one seeded."—*W. Jack's Mss.*

13. *L. coccineus*, *W. J.*

"*Flowers* spicate, tetrandrous, spikes axillary, erect; *leaves* sub-ovate, smooth.—*Malay. Miscell.* i. 8.

Found at Singapore.

*Branches* long, vimineous. *Leaves* alternate, petiolate, oblong-ovate, sub-cordate at the base, attenuated towards the apex, which is obtuse, entire, smooth. *Petiols* short. *Spikes* axillary, solitary or in pairs, erect, longer than the leaves; *flowers* sessile, closely pressed to the rachis before expansion. A single small ovate ferruginous *bracte* is situated at the base of each flower. *Calyx* superior, nearly entire, scarcely toothed. *Corolla* coccineous, four-petalled, erect, tubular; *limb* spreading; *petals* nearly linear, broader at the base. *Stamina* four, red, erect, inserted into the middle of the petals and equalling them in length; *anthers* oblong, adnate, red. *Style* red, erect, scarcely longer than the *stamina*. *Stigma* obtusely capitate. *Berry* ovate; elongated above, one-seeded. *Seed* contained in a hard shell, four-sided, its apex immersed in gluten into which the radicle shoots. *Embryo* inverse, the radicle produced beyond the albumen.—This species is nearly allied to *L. pentapetalus* of Roxburgh agreeing with it in habit and inflorescence."—*Jack, loc. cit.*

14. *L. odoratus*, *Wall.*

Smooth. *Leaves* sub-opposite, ovate-lanceolate, fleshy. *Spikes* axillary, sub-fascicled, with foveolate fleshy rachis and jointed, sessile, sub-immersed, spreading, six-petalled, hexandrous flowers.

This peculiarly elegant species I found on the mountains of Chandagiri and Sheopore, in flower in February and March.

*Branches* round, covered with pale dotted bark; younger ones brownish, smooth, as are all the other parts.—*Leaves* seldom entirely opposite, commonly sub-alternate, ovate-lanceolate, fleshy,

acute at both extremities, with undulate, even margins, veinless, of a pallid green colour, becoming yellowish, from four to six inches long, on short, slender, channelled *petiols*. *Spikes* axillary, sub-opposite; sometimes fascicled or sub-verticilled, almost sessile, shorter than the leaves, many-flowered. *Rachis* thick and fleshy, slightly angular, marked with deep sharp-margined small excavations, in which the ovaria are half immersed and as it were jointed. *Flowers* small, nearly white, scattered, approximate, spreading, very sweet-scented. *Calyx* exceedingly narrow, entire. *Corolla* about three lines long, six-petalled, at first clavate, afterwards spreading; petals cuneate, apex slightly concave, base firmly attached to the inside of the calyx. *Stamina* six, rather shorter than the petals. *Ovary* small, round, yellowish, supported by no other bracte than the acute margin of the foveola of the rachis, which is rather broader underneath. *Stigma* scabrous, nodding.

*Obs.* This species comes near to *L. pentapetalus*, Roxb. but differs abundantly in its jointed, sessile, always spreading, six-petalled, hexandrous flowers and foveolate rachis.—N. W.

### 15 *L. loniceroides*, Linn.

Smooth. *Leaves* from ovate to lanceolate, very attenuate, obtuse, base rounded.—*Peduncles* opposite, longer than the *petiols*, bearing a head of a few sessile hexandrous flowers, each of which is supported by four broad-ovate, acute, concave bractes.—*Corols* slender, tubular, very long, limb irregularly cleft into five cuneate spreading segments.

*L. coriaceus*, Lam. *encycl. bot.* iii. 597.

Specimens of this are preserved in Dr. Heyne's herbarium. They agree pretty well with Lamark's description, but differ from *Itti-Canni*, Hort. Mal. vii. p. 55. t. 29, which Linneus quotes in flora zeyl. p. 34, in having smooth flowers with five stamens, whereas Rheed's plant has bearded polyandrous flowers.—Pluckenet's *periclymenum surrectum persica foliis*, Almag. 287, t. 242, fig. 5, usually cited for Linneus's plant, seems to be a *Morinda*.—*L. umbellatus*,

Heyne in Roths nov. plant. spec. 192 differs, chiefly, by its decurrent petiols; those of our plant have a simple jointed base.—N. W.

16. *L. longiflorus*, Lam. *encycl. bot.* iii. 598.

Smooth. *Leaves* obtuse, the uppermost sub-cordate, veined. *Racemes* axillary, with long, clavate, pentandrous flowers. *Corolla* contracted below the limb; *laciniæ* cuneate.

*Valli-itti-canni*, Rheed. *mal.* vii. 5. t. 4. (and not tab. 3, as is quoted in the work itself.)

Specimens are preserved in Dr. Heyne's herbarium, under the name of *L. pentandrus*, Linn. which, however, has alternate leaves.—N. W.

17. *L. elasticus*, Lam. *l. c.* p. 599.

Smooth, with very strong, columnar, short-jointed branches. *Leaves* sessile, very thick, ovate, sub-acute, obscurely five-nerved. *Flowers* sub-sessile, fascicled about the joints, pentandrous; *tube* cylindric; *limb* beaked before expansion; *laciniæ* linear, long, separating from the base upwards.

*Belutta-itti-canni*, Rheed. *mal.* x. 7. t. 3. (and not tab. 4 as quoted in the work itself.)

Also preserved in Dr. Heyne's collection.

The leaves are remarkably thick and appear both tri- and triplinerved.—N. W.

18. *L. polystachius*, Wall.

Smooth. *Leaves* sub-alternate, ovate, obtuse, with acute base. *Racemes* short-peduncled, axillary, opposite, solitary, or two or three, fascicled round the base of the branches, shorter than the leaves. *Flowers* small, long-pedicelled, adscending, four-petalled, tetrandrous, berries globular, reflexed.

In the herbar. of Dr. Heyne it is marked "*Courtallum*.—*L. tetrandrus*."

A large species with slender, round, dotted branches. *Leaves*

from three to four inches long, by two and half or three broad, sometimes even larger, mostly alternate, reticulate and veined when dry, on short petiols. *Racemes* numerous, from two to three inches long; rachis slender; *pedicels* about three lines long terminated by a small oval, obtuse, concave and gibbous, persistent *bracte*, which embraces the ovary.—*Flowers* small, about four lines long, cylindric, at first erect on the adscending pedicels, afterward spreading; petals four, linear-cuneate.—*Stigma* capitate.—*Berries* nearly globular, reflexed.—N. W.

### 19. *L. vestitus*, Wall.

*Leaves* oblong-lanceolate, tapering, acute, convex, smooth and lucid above, densely covered underneath with ferruginous tomentum, as are also the fascicled tetrandrous tubular *flowers*.

A native of Nipal where I found it on the mountains of Chanda-giri and Sheopore. In flower most part of the year.

A remarkably stout branchy and spreading parasite. *Branches* round, brown, dotted; the young shoots, as well as the leaves, petiols, and the flowers densely covered with very soft, rust-coloured, stellate and mealy tomentum.—*Leaves* opposite, approximate, oblong-lanceolate, sometimes ovate, tapering, acute, three inches long, convex, very shining and smooth above; concave, densely tomentose, obscurely nerved underneath; margins recurved.—*Petiols* short, round.—*Fascicles* numerous, short-peduncled, in the axils of the fallen leaves, few-flowered, all their parts densely tomentose. *Flowers* sessile, supported by small ovate, acute bractlets. *Calyx* obscurely four-toothed. *Corolla* cylindric, with a sub-globular apex before expansion, afterward its limb bursts into four linear reflexed segments, half the length of the tube, which measures about eight lines. On the outside it is rust- or cinnamon-colored, within purple and smooth.—*Stamina* four.—*Berry* oblong, tomentose.

*Obs.* This comes very near Roxburgh's *L. ferrugineus*, it differs chiefly in the form and situation of its leaves which are approximate,

oblong, attenuate-acute, remarkably convex and quite polished above; in the former they are broader, obtuse, flat and somewhat remote.—N. W.

20. *L. viridiflorus*, Wall.

Smooth. *Leaves* opposite, short petioled, lanceolate, tapering at both ends, acuminate or obtuse. *Racemes* axillary, sub-fascicled, with remote, pedicelled, hexandrous, six-cleft, shortish flowers. *Bractes* three under each ovary.

I have only found this species in the forest of *Goukurrin* in the valley of Nipal, where it grows abundantly on trees. Time of blossoming the hot season.

*Branches* numerous, covered with ash-coloured, dotted bark; the primary ones sub-verticillate.—*Leaves* lanceolate, sometimes ovate-lanceolate, mostly acuminate, with gibbous margins, about three inches long, perfectly smooth, as is the whole plant; they are less coriaceous than in most other species, and rather conspicuously reticulate.—*Racemes* axillary and from the vestiges of the fallen leaves, solitary, or two or three together, sub-sessile, one-third shorter than the leaves.—*Flowers* green, somewhat remote, scattered irregularly, on peduncles, which are four lines long and jointed at the base.—*Tube* of the *corolla* about an inch and half long, slightly ventricose, obtusely six-cornered; *limb* divided regularly into six, rarely into five linear clavate, reflexed *laciniæ*, which are nearly as long as the tube; their inside rugose, their extremity broadish-concave, acute. *Filaments* erect, five or six, attached to the *laciniæ*, decurrent to the base of the corolla. *Anthers* small.—*Ovary* oblong, rounded at the base, and supported by three persistent, ovate, unequal, concave, adpressed, sub-acute bractlets. *Style* filiform; *stigma* rugose under the lens.—*Berry* small, ovate.

21. *L. ligustrinus*, Wall.

Young parts and inflorescence villous. *Leaves* lanceolate, acu-

minate, smooth. *Racemes* few-flowered. *Corols* quadrangular, four-petalled. *Stamina* four.

A native of the forests in the valley and on several of the mountains of Nipal, where I found it in blossom in the hot weather.†

*Branches* sub-fasciculate, covered with grey, smoothish bark; *young shoots* slightly villous, dotted.—*Leaves* opposite, or alternate, lanceolate, attenuato-acute, from one to two inches long, smooth, coriaceous, veined. *Petiols* short.—*Racemes* sub-umbellate, axillary, two or three, shorter than the leaves, with a few red, villous, small, sub-sessile *flowers*, which are deep red within and pale pink on the outside. *Calyx* extremely narrow, entire. *Corolla* four-petalled, six lines long; petals linear, spreading; their lower half converging into a quadrangular, slightly ventricose tube; furrowed within for the reception of the lower half of the four red *filaments*, which are attached to their base.—*Ovary* ferruginous, villous, supported by an oval bractlet; *stigma* purplish, sub-quadrangular.—N. W.

## 22. *L. bracteatus*, Heyne.

Covered with grey stellate tomentum. *Leaves* small, obovate, obtuse, tapering downwards; alternate, rather long-petioled. *Umbels* axillary. *Calyx* five-toothed, supported by a large tongue-shaped bracte. *Corolla*, clavate, lengthened. *Stamina* five.

In the herbarium of Dr. Heyne specimens of this most distinct species are preserved under the above name.

The whole plant is densely covered with stellate, ash-grey tomentum. *Branches* round, dotted, becoming smoother by age. *Leaves* alternate, scarcely an inch long, generally much smaller, from obovate to sub-rotund, on slender, longish petiols.—*Umbella* five-flowered, all the parts densely villous. *Pedicels* one-third of an inch long, terminated by an oblong, tongue-shaped, obtuse *bracte*, measuring half an inch in length. *Calyx* distinctly five-toothed. *Corolla* nearly an inch and a half long, slender, cylindric at the lower part, widening upwards; throat contracted; *laciniæ* five, linear, unilateral, much shorter than the tube; *stamina* five.—N. W.

23. *L. farinosus*, Lam. l. c. iii. 597.

*Leaves* alternate, smooth, leathery, ovate, obtuse, on thick short petiols. *Racemes* in axillary fascicles, covered with much mealy, stellate, whitish tomentum. *Corolla* with a ventricose tube, divided two-thirds of its length into linear semi-recurved *laciniæ*. *Stamina* five.

I found this handsome species in the forests of Singapore, covered with flowers in September and October.

Lamark's description is as usual excellent.—The leaves are peculiarly thick, sometimes almost as large as a hand, with unequal margins; rib very prominent; nerves remote, a little elevated. *Flowers* of a bright red colour, densely covered with easily separating, mealy, stellate tomentum; they are about an inch long; tube wide, and somewhat ventricose, divided below the middle into five long *laciniæ*, which are erect at their base, but reflexed at their upper end, where they are linear, obscurely triangular. *Berry* large, ovate, slightly tomentose.—N. W.

24. *L. pulverulentus*, Wall.

Upper parts extremely hoary and mealy. *Leaves* broad-ovate, on slender round petiols. *Racemes* lateral, fascicled, tomentose. *Flowers* peduncled, tetrandrous. *Tube* long, curved, cylindric; *laciniæ* four, shortish, reflexed, unilateral.

Found in flower in December on trees at *Hetounra* and along the banks of the Rapti in Nipal.

*Branches* brown, round; *young* ones as well as the *racemes* densely covered with yellowish, mealy, stellate tomentum.—*Leaves* opposite, coriaceous, large, broad-ovate, or ovate-oblong, acute, or obtuse, with a rounded, sub-cordate base, from five to seven inches long, smooth, with an elevated rib, and slightly prominent nerves. *Petioles*, slender, nearly an inch long. *Racemes* fascicled, lateral, in the axils of the fallen-leaves, three inches long, with numerous long, curved, tubular-clavate, scattered, thickly tomentose, green flowers.—*Pedicels* round; from two to three lines long, bearing at the apex a very



small, persistent, ovate scale.—*Calyx* imperceptible. *Corolla* nearly an inch and third long, curved, mealy without, smooth within; *tube* cylindric; *limb* clavate, about one-third the length of the tube, four-cleft; *laciniæ* linear, reflected, unilateral, two of them separated more deeply than the rest.—*Anthers* four, conniving, a little shorter than the *laciniæ*. *Ovarium* ovate, mealy; *style* filiform; *stigma* minute, capitate, elevated above the anthers, scabrous. *Berry* large, club-shaped, mealy.—N. W.

25. *L. umbellatus*, Wall.

*Leaves* oblong-lanceolate, smooth. *Fascicles* axillary and lateral, slightly pubescent, three-flowered, sub-umbellate. *Corolla* very long and slender, four-cleft. *Stamina* four.

I found this towards the top of Sheopore; it has also been brought to me from more northerly situations on the route to Gossain-Than. Time of blossoming the rainy season.

*Branches* long, slender, round, smooth, rugose. *Leaves* opposite, from oblong to lanceolate, tapering, acute at the base, short-petioled, smooth, leathery, from four to six inches long. *Umbels* from three- to four-flowered, axillary or from the vestiges of the fallen leaves, fascicled. *Peduncles* slightly covered with ferruginous tomentum, about three lines long, equalling the *pedicels*. *Flowers* nearly two inches long, pubescent, of a bright red colour. *Calyx* narrow, unequally and obtusely four-toothed. *Tube* very long and slender, filiform at first, curved, striated; mouth divided into four linear *laciniæ*, equalling a sixth part of the tube in length, reflexed; two of them separated much deeper than the rest.—*Stamina* four, spreading.—*Ovarium* villous, supported by a minute bracte; *style* filiform, longer than the *stamina*; *stigma* clavate.—N. W.

26. *L. cordifolius*, Wall.

*Branches*, *leaves* and *racemes* villous; young parts mealy. *Leaves* ovate-cordate, obtuse. *Racemes* fascicled. *Corolla* tubular, four-cleft.

Discovered at Shreenagur by Kamroop, a brahmun who is collecting seeds and specimens for the Hon. Company's botanic garden at Calcutta.

*Branches* round, ash-coloured, villous, dotted; new shoots as well as the tender parts thickly covered with pale furruginous or white, stellate tomentum.—*Leaves* opposite, broad-ovate, obtuse; base rounded, cordate, sometimes only retuse, four inches long, villous on both sides, becoming smoother by age, nerved when dry.—*Petioles* round, an inch long.—*Racemes* axillary, sub-sessile, villous.—*Pedicels* short.—*Corolla* an inch long, tubular, clavate, villous; mouth divided into four, short, lanceolate *laciniæ*. *Stamina* four.—N. W.

### HAMILTONIA, Roxb.\*

*Calyx* five-cleft. *Corol* infundibuliform. *Germ* one-celled, five-seeded; attachment of the ovula inferior. *Stigma* five-cleft. *Capsules* inferior, one-celled, five-valved. *Seeds* five, lattice-arilled. *Embryo* erect, and furnished with a perisperm.

#### 1. *H. suaveolens*, R.†

Shrubby. *Leaves* opposite, broad-lanceolar. *Flowers* in terminal, umbeliform heads.

This charming, fragrant-flowered shrub was found wild on the Rajmuhul hills by Mr. William Roxburgh, jun. and by him introduced into the Botanic Garden at Calcutta, where it blossoms during the cold season. It is named after Mr. William Hamilton of the Wood-lands near Philadelphia in North America, an eminent botanist, and the first who was at the expense of erecting a con-

\* This genus is called *Spermadictyon*, in Roxburgh's Corom. iii. 32, in consequence of the name Hamiltonia having been given by Wildenow, spec. plant. vii. 114, (without any good reason in my opinion) to Michaux's *Pyrularia*.—N. W.

† *Spermadictyon suaveolens*, Brown, l. cit. et Edwards's bot. regist. iv. 348.—N. W.

servatory in that country for the preservation of the plants of a hot climate. To this gentleman the botanic garden at Calcutta is under the greatest obligation for having enriched it with many of the choicest plants of the New World.

*Stem* stout, shrubby; *branches* opposite, cross-armed, ascending. *Bark* of the ligneous parts ash-coloured, with dark purple specks; general height from six to ten feet.—*Leaves* opposite, short-petioled, broad-lanceolate, smooth, entire, from three to six inches long.—*Stipules* or rather connecting membranes broad, ensiform.—*Flowers* sessile, in terminal corymbiform heads, on short, trichotomous branchlets, numerous, pure white, and delightfully fragrant.—*Bractes* ensiform, villous; several surrounding each fascicle or head of flowers, as well as intermixed amongst them.—*Calyx* superior, five-cleft, permanent; *divisions* subulate.—*Corol* one-petalled, funnel-shaped. *Tube* slender, widening a little towards the mouth. *Border* consisting of five, spreading, oblong divisions.—*Filaments* five, very short, inserted into the tube of the corol a little within its mouth. *Anthers* half-erect, linear.—*Germ* inferior, one-celled and containing five distinct chambers attached to the bottom of the cell, which now, thick and succulent, become the net-like aril of the ripe seed; each chamber contains one *ovulum* attached to its bottom.—*Capsules* the size of a pea, oblong, crowned with the calyx, one-celled, five-valved, opening from the apex.—*Seeds* five when all come to maturity, which is very seldom the case, their shape differing according to the number attached to the bottom of the cell, each enveloped in a beautiful, dry, net-like *aril*. *Integument* single, dark blackish-brown, friable.—*Perisperm* in very small quantity, indeed it may be called an *inner integument*.—*Embryo* conform to the seed, erect; *cotyledons* two, cordate, foliaceous, with a doubling down the middle. *Plumula* minute. *Radicle* oblong, inferior, pointing to the umbilicus.—Compare with *Psathura*, Gaert. carp. iii. 83. t. 194.

## Obs. by N. W.

I have found a marked variety of this shrub, if not a distinct species in Nipal, where it grows between Hetounra and Bheempedi, chiefly between *Bhinsadoban* and the last mentioned village, forming the most extensive thickets, which are rendered still more beautiful by the snow-white flowers of *Porana paniculata*. I have also met with it about the village near *Cheeshagurree*, and on several mountains in the valley itself; my people have brought it to me from Noakote.—It perfumes the air by its delicious fragrance from November until March, during which time it is indescribably beautiful. It differs from *suaceolens*, chiefly, in the colour of its flowers, which are azure-blue, and in the hairiness of most of its parts. It grows to a shrub of ten to twelve feet high, well furnished with branches. As the stem gets old, its epidermis becomes smooth and ash-coloured. Branches covered with pale soft hairiness, widening at the divisions and insertions of the leaves; while young reddish; very slender.—Leaves from five to eight inches long, with a lengthened acumen, base acute; the upper surface pubescent; the under one with numerous opposite, oblique, parallel nerves which, together with the strong rib and reticulate veins, are villous. Petiols very short.—Stipules broad and short, adpressed, soon withering, ending in a subulate acumen, at the base of which there are on each side one or two crenatures. Inflorescence most ample, densely villous, especially the corols, which are of a delightful sky-blue colour.—Ovarium somewhat five-cornered.—In every other respect the two plants agree. How far mine should be considered as a variety only, or a distinct species (which I would propose calling *S. azureum*), I must leave undecided, until the young plants, which were brought down with me, shall come to a proper age. It is worth observing, that all its tender parts and the flowers, on being bruised, as also in decaying, emit a peculiarly fetid smell, precisely as is the case with similar parts of *Serissa* and *Paderia fetida* and some others. When out of flower, the shrub looks for

sometime peculiarly withered and poor, in consequence of the unusual time during which the dried brown panicles remain on the branches.

2. *H. pilosa*, R.

Shrubby, straight, exceedingly hairy. *Leaves* opposite, short-petioled, lanceolate, entire. *Flowers* in axillary fascicles, mixed amongst many long, very hairy bractes.

A native of the Moluccas.

*MUSSAENDA*, Schreb. gen. 326.

*Calyx* five-cleft. *Corol* funnel-shaped. *Stamina* within the tube. *Germ* inferior, two-celled; *cells* many-seeded; attachment of the ovula on two jugiform receptacles, inserted on the partition. *Stigma* two-cleft. *Capsule* two-celled, three-valved. *Seeds* numerous.

1. *M. corymbosa*, Roxb.

Shrubby, erect. *Corymbs* terminal. *Leaves* oblong, smooth.

Native of Ceylon, Malabar, &c. In the botanic garden at Calcutta it grows to be a stout, rigidly erect, ramous shrub, and is in blossom during the rains, at which time few plants surpass it in beauty.

*Trunk* straight; *branches* many, decussate. *Bark* smooth.—*Leaves* opposite, short-petioled, oblong, pointed, entire, smooth on both sides, from six to nine inches long, and from three to four broad.—*Involucre* or *floral leaves* long-petioled, generally one to each primary division of the corymb, of an oval form, acute, pure white, smooth on both sides, five or seven-nerved.—*Petioles* of the floral leaves long, slender, drooping, inserted on the apex of the germ, forming one of the divisions of the calyx.—*Stipules* within the leaves, from a broad cordate base, tapering to an acute point.—*Corymbs* terminal, compound and decomposed, smooth.—*Bractes* ovate-lanceolate.—*Flowers* numerous, and uncommonly beautiful.—

*Calyx* five-parted; *divisions* erect, bristle-shaped, smooth.—*Corol* funnel-shaped. *Tube* slender, more than twice the length of the calyx, swelled a little about the middle, where the stamens are lodged; *mouth* closed with orange-coloured hair. *Border* of five ovate, fleshy, pointed, spreading divisions, on the upper side convex, villous, of a deep but bright orange colour, and greenish underneath. *Filaments* five, short, inserted into the middle of the tube.—*Anthers* linear, hid in the tube.—*Germ* inferior, two-celled; *ovula* numerous, on a pedicelled jugiform receptacle, projecting above the insertion and far below it.—*Style* half the length of the tube of the corol. *Stigmas* two.—*Capsule* oval, two-celled, two-valved.—*Seeds* numerous.

*Obs.* In some parts of India the white floral leaves are brought to table as an esculent herb.

*Obs. by N. W.*

This species differs decidedly from Vahl's *glabra*, Symb. iii. 38. which I found common on several of the Malay islands in wet places, near water courses, &c. in flower all the year round; and have also had from Silhet; a rambling, sometimes climbing shrub, much smaller in all its parts than that described above.—N. W.

2. *M. frondosa*, Willd. sp. i. 997.

Shrubby, erect. *Leaves* oblong, acuminate, villous. *Panicles* terminal, dichotomous, villous.

*M. Zeylanica*, Burm. Zeyl. 165. t. 76.

*Belilla*, Rheed. mal. ii. 27. tab. 17.\*

A native of various parts of India; in the botanic garden at Calcutta it grows to be a pretty large shrub, but with few branches, at least when compared to the preceding species, but the flowers,

\* The 18th plate is erroneously quoted by all my authors owing, I presume, to the mistake of Rheede, whose description refers to that, instead of the 17th plate.—N. W.

which appear about the end of the rains and beginning of the cool season, are larger and of a brighter colour.

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*Additional species, by N. W.*

*S. M. macrophylla, Wall.*

*Leaves* ovate, acuminate, pubescent. *Corymb* bracteate, trichotomous, very hairy, with short branches. *Calycine* segments large, foliaceous, oblong-lanceolate.

I have found this noble species on the mountains of Chundra-giri and Nagarjoun in Nipal, in blossom during the rainy season, in fruit during the winter.

A large spreading shrub, generally erect, though sometimes, when growing in very rich soil, tending to ramble. *Branches* four-cornered, brown; while young almost round, densely beset with soft and silky, long and spreading, grayish hairs. *Leaves* broad-ovate, from eight to ten inches long, spreading, acuminate, with entire and even margins; the uppermost rounded and sub-retuse at the base, and almost sessile, the rest acute, pubescent, slightly rugose, of a dark green colour above, pale, villous underneath, with elevated rib, and parallel, oblique, approximate nerves, which unite in sub-marginal arches. *Petiols* thick, channelled, sub-marginate, half an inch long.—*Stipules* large, ovate, tapering, acute or bifid, with recurved apices, nearly twice as long as the petiols, hairy within the base; there are a number of small, subulate, black glands loosely attached to the inner surface.—*Corymb* terminal, spreading, many-flowered, shorter than the uppermost pair of leaves, sessile, very hairy, trichotomous. *Divisions* short, round, the lowermost about an inch long. There are generally three *floral leaves*, broad-oval, acuminate, seven-nerved, somewhat villous, very thin and membranous, snow-white, with faintly green veins, two or three inches long, on slender elongated petiols, inserted laterally into the apex of the ovarium.—*Bractes* numerous, large, very hairy, opposite or solitary, under each

division of the inflorescence, deeply divided into two or three lanceolate, acuminate lobes, half an inch long or more.—*Flowers* large, orange-coloured, nearly sessile, hairy without. *Calyx* large, divided into five foliaceous, oblong-lanceolate, acuminate, entire segments; within the base there are a number of small subulate glands. *Tube* of the corolla greenish, an inch and half long, a little swelled above the middle, nearly three times longer than the calyx. *Limb* spreading, convex, divided into five ovate, cuspidato-acuminate *laciniæ*; throat and the upper part of the tube above the anthers filled with silky, yellowish, straight hairs. *Stamina* enclosed. *Ovarium* ovate, with a small bractlet or two at the base. *Stigma* below the anthers, divided into two linear, fleshy lobes. *Berries* dark purple, hairy, as large as a marrow-fat pea.—N. W.

#### 4. *M. incana*, Wall.

Covered with whitish, soft, adpressed hoariness. *Stem* nearly erect. *Leaves* ovate-oblong, sub-sessile, white underneath. *Corymb* terminal, fascicled, few-flowered, sessile. *Flowers* villous.

Brought to me from the road towards Gossain-Than in Nipal, in flower in August.

A small erect shrub, covered on all its parts with soft, shining, adpressed grey hairs. *Root*, simple, slender, ash-coloured, with short fibres. *Stem* from two to three feet high, round, scarcely the thickness of a goose-quill, undivided, sometimes, though seldom with one or two alternate, slender branches. *Leaves* ovate-oblong, tapering, acute, or acuminate, somewhat acute at the base, spreading, sub-decussate, a little longer than their interstices, which are pretty equal, from four to six inches long, villous above, villous and nearly white underneath, with parallel elevated rib and nerves; the uppermost nearly sessile.—*Petiole* scarcely three lines long, hairy.—*Stipules* erect, adpressed, equalling the petioles in length, tapering from a broad base to a bifid lanceolate apex; there are a number of glands on the inner surface of the lower broad part.—*Corymb* terminal, small, sessile, few-



flowered, exceedingly hairy, once or twice bifid, with short ramifications.—*Floral* leaves few, ovate, or sub-cordate, acuminate, milk-white, pubescent, five-nerved, two inches long, supported by a slender, lengthened stalk.—*Bractes* linear-subulate, hairy; as are also the remote segments of the *calyx*.—*Tube* of the corolla very long, hairy, widening upwards. *Lacinia* ovate, acuminate.—N. W.

*BAEOBOTRYS.\* Schreb. gen. N. 318.*

*Calyx* five-parted. *Corol* tubular. *Germ* semi-inferior, one-celled, many-seeded, attached to a free, inferior, central receptacle. *Berry* inferior, many-seeded.

1. *B. indica, R.†*

Shrubby. *Leaves* alternate, ventricose-oblong, grossly serrate. *Racemes* axillary, and terminal; the terminal ones more generally compound.

A large shrub, a native of Chittagong; in the botanic garden at Calcutta it flowers in February, March and April, but rarely perfects its seeds there.

It appears to differ from *Vahls. B. lanceolata, Symb. i. p. 19. t. 6.* in the leaves being shorter-petioled, and more grossly serrate; as well as in the inflorescence.

\* The identity of this genus with Forskael's *Maesa* being established, the latter name claims the right of priority to that of Forster and ought to be preferred. It belongs not to *Ericæ*, under which it has hitherto been placed; but to *Myrsinæ*, of which it forms a section, distinguished by the *inferior, many-seeded berry*.—N. W.

† This is an exceedingly common shrub in Nipal, where I have found it from Bechiako to the valley. It blossoms almost all the year round, but chiefly from April to October. The white berries ripen in the course of three months, and are eaten by the Parbuteeyas or hill people. It varies very much in the figure of the leaves from ovate to lanceolate, with an acute or rounded base, and in its racemes, which are simple or compound, short or long; so much so, that I am doubtful whether there are not more than one species concealed under it. The branches have a tendency to climb. The inflorescence is subject to a sort of monstrosity by which it becomes paniced and very branchy; in that state the flowers are abortive and do not open.—N. W.

*Trunk* erect, in plants eight or ten years old as thick as a man's leg. *Branches* numerous, extending down to the ground, straight and nearly erect.—*Bark* smooth, dark brown, general height of the whole plant from eight to twelve feet.—*Leaves* alternate, rather short-petioled, ventricose-oblong, tapering to an acute point, remotely and deeply repand, serrate, pretty smooth on both sides, and glossy on the upper surface, veins large and parallel, from three to six inches long, and from one to two and half broad.—*Stipules* none.—*Racemes* axillary, and terminal, often several together, some of them ramous, much shorter than the leaves; the terminal one generally paniced.—*Flowers* numerous, diverging, short-pedicelled, small, pure white.—*Bractes* one at the base of each pedicel, and two pressing on the calyx.—*Calyx* single, semi-supera, permanent, five-parted, divisions obtuse.—*Corol* one-petalled. *Tube* short, somewhat gibbous. *Border* of five equal, roundish, expanded segments.—*Filaments* short, inserted into the tube of the corol, immediately below the middle of the segments of the border, incurved, smooth. *Anthers* cordate, converging in form of a dome over the apex of the pistillum.—*Germ* semi-inferior, broad-ovate, one-celled, containing numerous ovula from the bottom of the cell. *Style* short. *Stigma* tending to be lobate.—*Berry* inferior, crowned with the permanent calyx, round, smooth, dry, size of a grain of black pepper, one-celled, evalvular. *Receptacle* round-cordate, free, attached to the bottom of the cell, as in *Primula*, &c. *Gaert. Sem.* i. 233. t. 50. *Seeds* numerous, angular.

## 2. *B. ramentacea*, R.

Shrubby. *Leaves* alternate, lanceolate, acuminate, entire, smooth. *Panicles* terminal, axillary, and lateral, ramentaceous. *Berries* minute, white, succulent.

Mulmooriya is the vernacular name at Silhet, where it is indigenous. It grows to be a pretty large shrub, blossoms in March and April, and the seeds ripen in October and November.

*Leaves* alternate, short-petioled, lanceolate, acuminate, entire, smooth, from two to six inches long.—*Panicles* terminal, axillary, and lateral, numerous, small, crowded with small, abortive, ferruginous, ramentaceous branchlets.—*Flowers* small, greenish-yellow.—*Bractes* ferruginous, small, subulate.—*Calyx* five-parted, almost five-leaved.—*Corol*; tube very small. *Border* of five orbicular, veined segments.—*Filaments* five, short, inserted into the tube of the corol.—*Anthers* two-lobed, broad-ovate.—The *Germ* may be called superior, ovate, smooth, one-celled; *ovula* numerous, on a sub-cylindric receptacle, rising from the base of the cell.—*Style* short. *Stigma* two- or three-lobed.—*Berries* completely inferior, size of a grain of black pepper, white, smooth, succulent, one-celled. *Cell* formed by a white, pretty hard, but thin, nuciform integument.—*Seeds* several, minute, angular, black, pitted, attached to the free, central receptacle, as in the germ. *Integuments* uncertain, on account of the diminutive size of the seed.—*Perisperm* soft, juicy, dark-coloured.—*Embryo* sub-cylindric, transverse.

3. *B. nemoralis*, Willd. spec. i. 992.\*

Shrubby. *Leaves* alternate, ovate-oblong, repand-dentate, smooth. *Racemes* axillary, short, and crowded.

*Mulmooriya* is the vernacular name in Silhet, where it is indigenous and grows to the size of a pretty large, very ramous, upright shrub. It flowers in March, and the seeds ripen in May.

*Branches* and *branchlets* numerous, nearly erect, round and pretty smooth.—*Bark* of the old woody parts brown, of the young shoots green.—*Leaves* alternate, petioled, ovate-oblong, margins repand, serrate-dentate, (for there is a mixture of the whole,) in some acuminate, both sides smooth, texture firm, three or four inches long, by two broad.—*Racemes* axillary, about twice the length

\* It is very doubtful to me whether the shrub described here is Vahl's plant (*Symb. i. 19*; *Maesa Basobotrys*, Syst. Veg. v. 226.)—I have specimens from Silhet with nearly entire leaves.—N. W.

of the petiols, ramous, and crowded with minute white flowers.—*Bractes* subulate, one-flowered, beside one or two broader on the short petiols, or pressing the calyx.—*Calyx* campanulate, five-parted.—*Corol* with a very short tube, and a border of five oval segments.—*Filaments* five, inserted into the tube, under the middle of the segments of the border, short, incurved.—*Germ* superior, one-celled, containing numerous *ovula*, attached to a free receptacle, rising from the bottom of the cell. *Style* short. *Stigma* three-lobed.

4. *B. glabra*, R.

Arboreous. *Leaves* alternate, ovate-lanceolate, entire, smooth. *Panicles* axillary, smooth.

A slender tree, with straight, smooth branches, and leaves; a native of Chittagong, where it flowers in March.

5. *B. tetrandra*, R.

*Leaves* alternate, oblong, entire. *Racemes* axillary. *Flowers* tetrandrous.

A native of the Moluccas.

Additions by N. W.

6. *B. (Maesa) argentea*, Wall.

Shrubby. *Leaves* ovate, acuminate, sharply dentate, pubescent, white and silvery underneath. *Racemes* axillary, short, sub-fascicled.

I have found it on Chundra-giri, blossoming in April and May; and with ripe fruit in July.

A large branchy shrub, from five to six feet high; *branches* elongated, sub-scandent, rounded, softly and densely villous while young, pubescent when old.—*Leaves* ovate, acuminate, with an acute, entire base, otherwise sharply sinuato-dentate, from six to eight inches long, slightly pubescent above, of a silvery white colour underneath; *nerves* parallel, opposite, sub-dichotomous, villous.—*Petioles*

slender, rounded, channelled, villous, an inch and half long.—*Racemes* axillary, pubescent, oblong, scarcely equalling the petiol, having a few alternate branches at the base so as to give them the appearance of being fascicled, sessile, erect.—*Flowers* close to each other, smooth, white, nodding, on very short pedicels, each of which has a lanceolate *bracte* at the base, and two minute alternate ones a little above it. *Calyx* persistent, semi-inferior, ovate, marked as well as the corolla and bractes with the peculiar elevated, glandular, broadish, unequal, brown lines, which are observable in all the species of this genus, and which Mr. Brown describes as belonging to most members of the family of *Myrsineæ*; *lacinia* ovate, acute, membrane-margined, ciliate.—*Tube* of the *corolla* ventricose, twice as long as the calyx; *lacinia* rounded, ciliate, with radiating veins. *Stamina* a little shorter than the corolla.—*Ovarium* round, nearly smooth, one-celled, with numerous *ovula* attached to the free, erect, pedicelled placenta. *Style* thickish, short. *Stigma* divided into three subulate lobes.—*Berry* inferior, round, smooth, white, of the size of a pepper corn, crowned with the five lacinia of the calyx, which connive towards the persistent base of the style. *Seeds* exceedingly numerous and minute, cuneiform, immersed in the faveolate surface of the fleshy globular placenta.—N. W.

7. B. (*Maesa*) *macrophylla*, Wall.

Arboreous, densely villous. *Leaves* ovate, sub-cordate, very soft on both sides, obtuse or acute, strongly dentate. *Panicles* axillary and terminal.

This fine species grows in various parts of Nipal. I have found it at Hetounra and on Chundra-giri; it has likewise been brought to me from Noakote and from Munbhunjun at the foot of Sheopore, to the N.—The time of blossoming differs of course considerably according to these different stations, from April to July; the fruit ripens in September—December.

A tree of from eight to ten feet in height, ramos and spreading. *Branches* round, villous, chiefly while young, and then ferruginous.

*Leaves* broad-ovate, with a rounded sub-cordate or entire base, acute, sometimes blunt, from six to twelve inches long, strongly marked with unequal, cuspidate teeth, densely villous on both sides, greyish; *nerves* on the under surface elevated, parallel.—*Petioles* round, channelled, villous, one or two inches long.—*Panicles* axillary and terminal, ovate, tapering into an acumen, peduncled, mostly equalling, sometimes exceeding the length of the leaves, rarely shorter, villous, consisting of slender, simple, many-flowered racemes, measuring from two to four inches in length.—*Flowers* white, smaller than those of the preceding species, with which they otherwise perfectly agree. *Berry* also smaller; *seeds* rather larger, blackish.

*Obs.* When growing in rich situations, especially when in fruit, it is exceedingly like a *Callicarpa*.—N. W.

#### 8. *B. (Maesa) dubia*, Wall.

Shrubby? *Leaves* ovate, acuminate, grossly serrate, nearly smooth. *Panicles* axillary, racemose, equalling the leaves.

Gathered by the late Dr. Benj. Heyne at Wynaad and Coorg, in blossom in the month of December. There is no name, but a good generic character attached to his specimens.

This species comes nearer to the figure of Vahl's *B. lanceolata*, than to Roxburgh's *indica*; differing perhaps only in the much more strongly dentate leaves.—*Branches* very slender, ash-coloured, with small dots, scarcely pubescent.—*Leaves* approximate, ovate, acuminate, grossly and acutely serrate, sub-acute at the base, about five inches long, smooth above, the nerves slightly reticulated beneath.—*Petioles* about an inch long.—*Panicles* axillary, short-peduncled, equalling the leaves, consisting of several simple, almost filiform, pubescent racemes; the terminal one longer than the rest, measuring three or four inches.—*Flowers* smooth, remarkably small, in every other respect like those of the preceding species.—N. W.

*VERBASCUM. Schreb. Gen. N. 331.*

*Corol* rotate, somewhat unequal. *Capsules* superior, two-celled, two-valved.

1. *V. Thapsus. Willd. spec. i. 1001.*

*Leaves* decurrent, downy on both sides. *Stem* simple.

Found by Captain Hardwick amongst the mountains on his tour to Shreenugura. In the botanic garden at Calcutta it grows to the height of from six to eight feet, the stem still perfectly straight, but often ramous; it blossoms during the cold season.

*Obs by N. W.*

This appears to be a distinct species, which I propose calling *V. indicum*, and which may be thus characterised: The whole plant densely hoary. *Leaves* decurrent, elliptic-oblong, acuminate, grossly crenate, waved. *Raceme* spiked, dense, elongated, marked with variously bent, large, acuminate bractes. *Laciniae* of the corolla nearly equal, rounded; two longer *filaments* perfectly smooth.

I found it in abundauce on the most exposed and naked parts of Ek-dunta between Koola-kana and Bheempadi in Nipal. I have also had it from Gosain-Than. In the former situations it blossoms in the cold weather from December to March, in the latter during the rains.

*Root* strong, woody, fibrous. *Stem* nearly simple, straight, strongly winged, from two to three feet high in the wild state, much taller when cultivated; very thick; it is densely covered, as are all the other parts, with greenish white, soft, stellate tomentum.—*Leaves* from oblong to obovate, mostly ending in a very long, slender acumen, the lowermost from one to two feet long, and from four to six inches broad, never obtuse; the others gradually decreasing in size, and waved; they are all strongly crenate; the uppermost sub-ovate, resembling the bractes.—*Raceme* from one to three feet long, with innumera-

ble yellow, fragrant *flowers*; the lowermost fascicles remote. *Outer bractes* very large, spreading and conspicuous, variously bent and waved, acuminate, much longer than the flowers; inner ones oblong, equalling the calyx.—*Corolla* sub-rotate, with ovate, obtuse laciniae, a little villous on the outside. Two longer *filaments* perfectly smooth, the others woolly. *Anthers* of a vivid red colour, reniform.—*Capsule* large, slightly woolly.—N. W.

### HYOSCYAMUS, Linn.

*Corolla* infundibuliform, obtuse. *Stamina* bent inwardly. *Capsule* operculate, two-celled.

#### 1. *H. niger*, Linn.

*Leaves* sinuate, stem-clasping; *flowers* sessile.

Native place, the west and north parts of Hindoosthan. My worthy friend Major-General Hardwick informs me that it grows wild between *Futtehgur* and the artillery practice-ground at *Delia* to the westward, whence he brought the seeds to Cawnpore. *Seeds* were sent down to me from Moradabad, in 1815, by the Marchioness of Hastings, the noble patroness of the Agriculture and Botany of this country, to whose warm and successful, but most unostentatious exertions to improve and promote the husbandry and horticulture of the Indian empire, of which I have been an eye witness for several years past, while India possessed that illustrious lady, I am proud to seize this opportunity of bearing the amplest testimony.\* We have ever since cultivated it in the botanic garden, for the purpose of supplying annually the Hon. Company's dispensary at Calcutta with the herb for preparing the extract, which as well as

\* I am happy in this opportunity of corroborating this testimony to the zeal of the Marchioness of Hastings in promoting the agriculture and botany of India, and of saying that the zeal and abilities of my much esteemed friend Dr. Wallich in these pursuits had gained him a very high degree of the confidence and esteem of both the Marquis and Marchioness. *Ed.*



the plant itself perfectly agree with those of Europe. It blossoms in January and February; the seeds ripen in April.—It should be sown in October.—N. W.

*DATURA*. Schreb. Gen. N. 332.

*Corol* infundibuliform, plaited. *Calyx* tubular, angular, deciduous. *Capsule* four-valved.

1. *D. fastuosa*, Willd. spec. i. 1008. Fleming in *Asiat. Res.* xi.

Annual, coloured. *Leaves* with the two sides unequally ovate, margins repand, lobate. *Flowers* double. *Fruit* round, echinate, drooping.

*Sung.* कृष्णधूर्त्तरकः, Krishnadhootooruka, खिग्धः, Snigdha, कनक, Kunuka, सचिवः, Suchiva, शिवः, Shiva, कृष्णपुष्पः, Krishnupoosha, विषारातिः, Visharati, क्रूरधूर्त्तरकः, Kroorudhoortturuka, राजधूर्त्तरकः, Rajudhoortturuka, राजधूर्त्तः, Rajudhoortta, महाशठः, Muhashutha, निस्त्रिणपुष्पकः, Nistrinupooshpuka, भ्रान्तः, Bhranta.

*Beng.* Kala-Dhootora.

*Stramonium indica tertia*, s. *Datura rubra*, Rumph. amb. v. 243. t. 87. f. 2.

A native of various parts of India. It flowers during the rainy and cool season. The dry root smoked is said to relieve spasmodic asthma.

2. *D. Metel*, Willd. spec. 1009. Fleming, *Ibid.* 165.

Annual. *Leaves* with the two sides unequally ovate, margins repand-lobate. *Fruit* round, spinous.

*Sung.* उन्मत्तः, Oonmutta, कितवः, Kituva, धूर्त्तः, Dhoortta, धुस्त्रः, Dhoostooru, धुस्त्रः, Dhoostooru, धुत्तूरः, Dhoottoora, मातूलः, Matoola, मदनः, Muduna, चुस्करः, Chooskura, शठः, Shu-

tha, मातुलकः, Matooluka, श्यामः, Shyama, शिवशेखरः, Shivashekhura, खर्जूमः, Khurjjoogna, काहनपुष्पः, Kahunupoospha, खनकण्ठफलः, Khunakuntuphula, मोहनः, Mohana, खनभोन्मत्तशिवः, Khunabhonmuttushiva, महामोहो, Muhamohee, शिवप्रियाः, Shivapriya, and all the names of Gold.

Beng. Dhootoora.

*Stramonium indica prima, seu Datura alba, Rumph. amb. v. 242. t. 87. f. 1.*

Hummatu, *Rheed. mal. ii. 47. t. 28.*

Very common every where over India; produces flowers and seed the whole year.

### Additions by N. W.

3. D. *Stramonium, Linn.*

*Leaves* ovate, smooth, angular, dentate. *Capsules* spinous, erect, ovate.

Var.  $\beta$  *canescens, Wall.* The whole plant pubescent, glaucous, pale. *Parbutteya, Muhadeo-Soa.*

A native of all the mountainous parts of the north of Hindoosthan. I have found it on all the parts of Nipal which I have visited, both mountains and valleys, affecting precisely similar situations to those occupied by the plant in Europe, and blossoming all the year round.

It rises to the height of from two to five feet, with a thick, solid, dichotomous, angular *stem*, and roundish *branches*, which are covered with glaucous pubescence, giving the whole a pallid appearance. *Leaves* broad-ovate, from six to eight inches long, sinuate, and lobed, acuminate, very unequal at the base, one side being much shorter, pubescent and pale above, smooth underneath, except along the prominent rib and nerves; lobes large, acute. *Petioles* thick, round, three inches long, slightly sulcate and pubescent.—*Flowers* axillary and from the bifurcations, erect, four inches long, short-peduncled. *Calyx* pubescent, membranous, very pallid, oblong, an inch and half long, with five very prominent angles,

and concave sides; mouth divided into five ovate, acute, keeled teeth. *Corolla* yellowish-white, smooth; tube cylindric, twice the length of the calyx; *limb* spreading, nearly two inches in diameter, with five distant, longish, incurved teeth.—*Capsule* ovate, obtuse, four-furrowed, erect, pubescent, short-peduncled, two inches long, well furnished with strong spines of unequal length, supported by the persistent bottom of the calyx, which is reflexed, truncated, annular, having four excavations underneath; divided from top to bottom into four valves, four-celled, apex itself two-celled. *Seeds* black, compressed, oval-reniform, smooth, rugose and dotted.

*Obs.* My most respected friend Dr. J. Fleming is mistaken in excluding *D. Stramonium* from this country (see his interesting catalogue quoted above, and the separate 8vo edition, p. 18). I dare not venture to separate my plant from that species, except as a variety, distinguished by its greater size, pale glaucous colour and pubescence: the flower is always single and of a yellowish white colour, possessing strongly the smell of the parent plant. It approaches to *Tatula* in stature, but differs in the colour of the stem and flower.—N. W.

### *PHYSALIS.* Schreb. Gen. N. 336.

*Calyx* gibbous, five-toothed. *Corol* rotate. *Berry* superior, within the inflated calyx, two-celled, many-seeded.

1. *P. flexuosa*, Willd. spec. i. 1020.

Shrubby; *branches* flexuose. *Leaves* oblong, often paired. *Flowers* axillary, crowded, sessile.

Pevetti, Rheed. mal. iv. 113. t. 55.

Beng. Ushwa-gundha.

Teling. Penneroo.

This perennial species is to be found in almost every soil and situation. Flowers all the year round.

*Stems* several, erect, shrubby, flexuose, two-forked, round, downy. *Leaves* double, short-petioled, ovate, a little scalloped, downy, from two to four inches long.—*Flowers* axillary, sub-sessile, crowded, small, greenish.—*Corol* campanulate.—*Anthers* split at the base.—*Berry* red, smooth, size of a pea.

The Telinga Physicians reckon the roots alexipharmic; indeed they are all much addicted to the belief of such powers being present in a great variety of their simples; hence the name *Naga*, (i. e. the hooded snake, *Coluber Naga* of *Linneus*) being so often annexed to that of various plants. They are as fond of the study of antidotes as the Greek or Roman Physicans were, which will appear the less surprizing if we consider the great number of poisonous animals and plants which abound in the warmer part of Asia, to the dreadful effects of which, they are very often eye-witnesses. It is therefore very natural for them to attend much more to this branch of medicine than is done in cold climates, where there is scarcely an animal of which the bite or sting can be said to be mortal.

2. *P. Alkekengi*, Willd. spec. i. 1022.

Herbaceous; *branches* straggling. *Leaves* in pairs, entire, and somewhat angular.

A native of Persia. In the botanic garden at Calcutta it flowers during the cool season, but does not thrive in Bengal.

3. *P. peruviana*, Willd. spec. i. 1022.

Biennial or perennial, very ramous, diffuse, pubescent. *Leaves* double, or single, and then with a branchlet; cordate, dentate. *Flowers* solitary, drooping. *Stigma* two-cleft.

*P. edulis*, Sims Bot. mag. 1068. I concur with the author, in referring *P. pubescens* to the same species.

Beng. Tepuriya.

I have only found this in a cultivated state and that on account of its large, yellowish, palatable berries; although naturally perenn-

nial, yet the plants are reared annually from seed, as they are not fruitful after the first year. The same is the case with the *Capsicum* and the many varieties of *Solanum Melongena*.

*Obs. by N. W.*

In India where every thing that serves to remind us of Europe is cherished, this fruit is called *Gooseberry*, and with an effort of the imagination it may tolerably well pass for a real one, as it possesses a faint resemblance to the flavour of that fruit. It is as large as a full-sized cherry, globular, yellow, and at length orange-colored. Its taste is pleasantly acid, which renders it peculiarly suited for tarts. It is always served on the table enveloped and nearly concealed in the arid membranous calyx. The Hindi name is *Mako*.—N. W.

4. *P. minima*, Willd. spec. i. 1024.

Annual, ramous, downy. *Leaves* double or single, and then with a branchlet, ovate, irregularly dentate. *Flowers* solitary, erect. *Stigmas* entire. *Fruit* pendulous.

Inota-Inodien, *Rheed. mal. x. ceu-Moctæ*, 139. t. 70.

Beng. Bun Tepuiya.

Hind. Toolati-pati.

A small ramous annual, common on cultivated ground, both in Bengal and on the coast of Coromandel.

*Stem* short, but distinct; *branches* many, two-forked, striated, a little downy.—*Leaves* double, except at the divisions of the branchlets, where they are single, the smaller branchlets occupying the place of the other; unequal, petioled, cordate, irregularly toothed, downy on both side; from two to four inches long.—*Peduncles* solitary, axillary, erect, one-flowered. *Flowers* small, campanulate, uniform pale yellow, and smooth.—*Filaments* a little hairy, yellow.

5. *P. stramonifolia*, Wall.

Perennial? dichotomous, villous, while young densely tomentose

and ferruginous. *Branches* angular. *Leaves* geminate, ovate, elliptic acute, repand-lobed, attenuate at the base, villous underneath. *Fruit-bearing calyx* erect, very large, coriaceous, oblong, ten-nerved, ten-keeled, with rounded lobes.

A native of Gosain-Than in the Himalaya; my people brought fruit-bearing specimens to me in August and October.

*Branches* strong, angular, slightly ferruginous and villous, dichotomous, while young densely covered with ferruginous, mealy, separable tomentum. *Leaves* elliptic-ovate, geminate, one of the pair from six to seven inches long, the other twice or thrice smaller; acute, unequally sinuate or sub-entire; sides pretty equal, as is also the attenuate, acute base; smoothish above, densely villous underneath, especially while young; reticulate with strongly marked rib and nerves. *Petiol* round, villous, partially margined from the sub-decurrent base of the leaf, the *larger* two inches, the *smaller* half an inch long.—*Peduncles* interaxillary, ascending or spreading, a little more than an inch long, round, sometimes club-shaped, sparingly villous.—*Capsule* erect, smooth, globular, as large as a good-sized cherry, two-celled, many-seeded, sessile, and concealed within the enlarged *calyx*, which is oblong-ovate, ventricose, two inches long, coriaceous, arid, villous, strongly marked with ten large, prominent ribs, rugose and reticulate; its mouth rather narrower, divided into five broad, obtuse, rounded lobes.—*Seeds* exceedingly copious, reniform, as large as those of the *Mandragora*, which they also resemble in structure; brownish black, minutely punctulate, attached to a large scrobiculate, rounded *receptacle*.

*Obs.* I have only seen fruit-bearing, herbaceous branches of this singular species; the root is probably perennial. The recent plant is somewhat viscous and possesses a peculiarly nauseous smell, not very different from that of fresh tobacco leaves.—All the tender parts are densely clothed with mealy, ferruginous, loose tomentum.—N. W.

**SOLANUM.** Schreb. Gen. N. 387.

*Calyx* five-parted. *Corol* rotate. *Anthers* coalescent, gaping at the top with a double pore. *Berry* superior, two-celled, many-seeded.

*Sect. 1st. Unarmed.*

1. *S. pubescens*, Willd. spec. i. 1026.

Sub-arboreous, unarmed. *Leaves* alternate, oblong, pointed, entire, downy. *Cymes* dichotomous.

Gandira\* the Sanscrit name, see *Asiat. Res.* iv. 258.

*Sung.* श्वेतवृहती, Shwetavrihatee, श्वेतमहतोका, Shwetumuhulika, श्वेतसिंहि, Shwetusinghee, श्वेतफला, Shwetuphula, श्वेतवर्तकिनो, Shwetuvartakinee.

*Beng.* Urusa.

*Teling* Rusa-ghedi mann.

Amongst the mountains in the Telinga country this grows to be a small or middle-sized tree, with a very thick shady head. Flowers during the hot season.

*Leaves* alternate, short-petioled, oblong, entire, downy, from six to ten inches long.—*Cymes* terminal or leaf-opposed, two-cleft; *ramifications* recurved.—*Flowers* small, white, very numerous.—*Berry* the size of a cherry.

*Obs. by N. W.*

I strongly suspect that Roxburgh is mistaken in considering this to be Willdenow's *pubescens*.—It is a plant which I have found very common in valleys and on the sides of the lower mountains of Nipal, where it blossoms all the year round. I have likewise had it from the N. W. mountains of Hindoosthan; and from Shreenugur, where the plant is called असेडु, *Ushedu*. It agrees perfectly with *S. verbascifo.*

\* This name probably belongs to some other species. Ed.

*lum*, Linn. which has been well described by Poiret, in *Encycl. bot.* iv. 279, and by Loureiro, *flor. cochinch.* ed. Willd. i. 159.—N. W.

2. *S. auriculatum*, Willd. *spec.* i. 1025.

Sub-arboreous, every part downy. *Leaves* broad-lanceolate, entire. *Stipules* axillary, obliquely ovate-cordate. *Cymes* in the forks of the branchlets, dichotomous.

A native of Mauritius, and introduced by Captain Tenant, into the Botanic Garden at Calcutta; where it blossoms during the rainy and cold seasons, and continues to ripen its fruit from December till May.

*Stem* nearly erect, in six years as thick as a man's leg, and about eight feet high.\* *Bark* smooth, ash-coloured. *Branches* dichotomous, spreading much. *Branchlets* and all the tender parts most completely clothed with sessile and pedicelled, hoary, stellate pubescence.—*Leaves* alternate, petioled, broad-lanceolar, tapering to a rather obtuse point, entire; clothed underneath like the branchlets; upper surface a little hairy; from four to eight inches long, and two or three broad.—*Petiols* channelled, downy like the branchlets.—*Stipules* in sessile, axillary pairs, obliquely ovate-cordate, large, and recurvate round the branchlets, looking more like small common leaves than stipules.—*Cymes* in the forks of the branchlets long-peduncled, dichotomous. *Ramifications* recurvate, sub-second.—*Flowers* numerous, subsessile, small, lively blue-purple.—*Berry* spherical, size of a small cherry, when ripe of a dull yellow.

*Obs.* Independently of the colour of the flowers, the stipulæ or axillary leaves render this species readily known; in all other respects it almost exactly resembles the preceding; in that plant there are no stipulæ, and the flowers are white.

*S. S. Lycopersicum*, Willd. *sp.* i. 1033.

Annual. *Leaves* pinnate, gashed. *Racemes* bipartile, leafless. *Fruit* smooth, vertically compressed, torulose.

\* I had a plant sixteen feet high which was not more than eight years old. *Ed.*



*Pomum amoris*, *Rumph. amb. v. t. 154. f. 1.*

Although this is now very common in India, I suspect it is as little a native as the common Potatoe, which is now very generally cultivated over India, even by the natives for their own use.

*Obs. by N. W.*

The potatoe is very generally and successfully cultivated in the valley as well as on the lower hills of Nipal so as to afford fresh crops the whole year round. The roots are planted in February, June and November, and are gathered after three months.

4. *S. rubrum*, *Willd. sp. i. 1034.*

Annual, erect, unarmed. *Branches* somewhat angular. *Leaves* ovate, dentate, lobate. *Umbels* short peduncled. *Flowers* and berries drooping.

*Beng. Goorkhi.*

*Neien tsjunda, Rheed mal. x. t. 73.*

A common weed in gardens all over India, with flowers and ripe seed the whole year round.

Seeds received from the Mauritius under the name of *Solanum nodiflorum*, (*Willd. sp. i. 1035*), produced this very plant. On that Island it is called *Brede*, and very generally cultivated as a pot herb.

*Obs. by N. W.*

The *red variety* of *S. nigrum* I have frequently met with on uncultivated places, among rubbish, in Nipal, both in the valley and on the sides of hills and mountains, at a considerable elevation. At a place called *Mareko* I have found a variety which answers exactly to Willdenow's *S. nigrum var. melanocerasum*.—At the isle of France there are two varieties of *nigrum* cultivated and very generally eaten boiled in broth, or as a vegetable curry. It is considered a wholesome food of which I have often partaken with impunity; still I recollect having seen one of the Aide de Camps of Sir R. T. Farquhar suffer

very seriously from the narcotic effects resulting from an incautious use of it.—N. W.

5. *S. decemdentatum*, R.

Annual, erect, ramous, hairy. *Leaves* in pairs, or solitary with a branchlet, ovate. *Peduncles* axillary, from two to six together, one-flowered. *Calyx* ten-toothed.

A native of China; from thence introduced into the botanic garden at Ca cutta, where it blossoms and ripens its berries most parts of the year. It has the habit of a robust, pubescent variety of *Solanum nigrum*.

*Stems* annual, nearly erect, with alternate, flexuose, pubescent, round branches and branchlets; general height two or three feet.—*Leaves* in pairs or single, and accompanied with a branchlet, petioled, ovate-oblong, somewhat acute, villous.—*Peduncles* axillary, from two to six together, one-flowered, drooping when in blossom.—*Calyx* ten-toothed, pubescent.—*Berries* the size of a pea, smooth, bright red, when ripe

*Obs. by N. W.*

I have found this plant or one exceedingly like it at Singapore, in flower and fruit in September. It differs only in being a little hairy, and comes near to *S. Rumphii*, Dunal, which is *Halicacabus indicus minor niger*. Rumph. amb. vi. 61. t. 26. f. 1.—N. W.

6. *S. spirale*, R.

Shrubby, void of pubescence. *Leaves* paired, lanceolar, entire. *Racemes* lateral, the unexpanded part spirally revolute. *Segments* of the calyx glandular.

*Bugua* is the vernacular name in Silhet, where it is indigenous, and in flower and fruit at various times of the year. Though rather scud it is an ornamental species on account of its smooth, deep green leaves; spiral racemes of pretty white flowers; and numerous small, round, yellow berries.

## Sect. 2nd. Armed.

7. *S. Melongena*, Willd. sp. i. 1036.

Perennial. *Leaves* obliquely-ovate, downy, scallop-lobed. Fertile *flowers* solitary, long-peduncled, drooping; the barren ones on small racemes. *Fruit* oval, smooth.

*Sung.* वार्ता, Vartta, वार्ताक, Varttakoo, वार्ताकः, Varttaka, वार्ताको, Varttakee, हिंगुली, Hingoollee, सिंदो, Singhee, भण्टाकी, Bhuntakee, दुषधर्षिणी, Dooshpradhurshinee, वङ्गन, Bunguna, वङ्ग, Bunga.

*Beng.* Begoon

*Hind.* Bangan.

*Teling.* Wangkai.

*Nila-Barudena*, *Rheed. mal.* x. 147. t. 74.

*Trongum hortense*, *Rumph. amb.* v. 238. t. 85.

Of this very universally useful, esculent species, there are many varieties cultivated in India. The plants are annually renewed from seed, though all the varieties are perennial; but like the *Capsicums* not so productive after the first year. They continue to blossom and bear fruit the whole year, but chiefly during the cold season. In Bengal, in a rich soil, they have very few prickles, but in a poor one many.

8. *S. longum*, R.

Perennial. *Leaves* irregularly ovate, scalloped. *Fruit* cylindrical, smooth; *calyx* sometimes armed.

*Sung.* कुली, Koollee.

*Beng.* Kooli-begoon.

Neer Wanga is the Telinga name of the plant, and Neer Wangkai the fruit.

Long Brinjal of Europeans.

I consider this to be a species clearly distinct from *melongena*, for the fruit is always cylindrical, never changing by culture into any other form. The plant is biennial, and in every respect like *Me-*

*longena*, the fruit excepted. I have only met with it in gardens, where it is cultivated for the table, and have had it nine years in mine without producing any change in it. The cold season is the proper time for rearing them.

The plants will exist several years, but are either dug up or neglected after the first.

*Stem* short, erect, somewhat woody. *Branches* numerous, spreading, two-forked, downy, sometimes prickly; the whole plant is from two to three feet high.—*Leaves* alternate, petioled, oblong, scolloped, or sub-lobate, downy; from six to ten inches long; sometimes the principal nerve is prickly on the underside.—*Flowers* bowing, large, of a beautiful, bright bluish-purple, they are of two kinds, abortive with a minute pistil on a small raceme or umbellet; and a single fertile one upon its own proper petiol, which generally stands immediately below or close by the peduncle of the racemes.—*Calyx* and petiols sometimes prickly.—*Berry* pendulous, cylindric, generally a little curved, but never in the least clubbed, smooth; yellow; from nine to eighteen inches long, and from one and half to two and a half in diameter, it is generally three-celled.

9. *S. insanum*, Willd. sp. i. 1037.

Perennial, (in a poor soil) armed. *Leaves* ovate, sinuate, downy. *Peduncles* from one to four-flowered. *Calyx* often armed. *Fruit* from oval to spherical, polished.

A native of Amboyna, yet I doubt whether Rumphius's *Trongum hortensi* can be any other than the real Indian *melongena*. From the same Island, the seeds of a variety of the above, (*insanum*) were brought to the botanic garden at Calcutta. Their plants are more spinous, and the fruit perfectly round, white, and smooth, almost the size of a small *Crab-apple*. This I take to be Rumphius's *Trongum agreste*, vol. v. p. 240. t. 86. f. 1. and so far as my observation extends it is not cultivated on the continent of India.

10. *S. aethiopicum*, Willd. sp. i. 1086.

Annual, scarcely armed. *Leaves* oval, repand, downy. *Peduncles* one-flowered. *Berries* red, smooth, depressed, five-lobed.

From the Mauritius, where it is said to be indigenous, it has been introduced into the botanic garden at Calcutta, where it grows to the height of about two feet, with many spreading branches, clothed with short stellate pubescence, and here and there a small straight prickly; flowers white, and appear at all seasons.

11. *S. diffusum*, R.\*

Diffuse, perennial, prickly. *Leaves* oval, deeply scalloped, downy and prickly on both sides. *Peduncles* and calyces prickly. *Berries* round.

*Solanum incanum chinense*, Pluck. Alm. 62. f. 1.

*Sung.* सर्पतनु, Surputunoo, क्षुरिका, Kshurika, पोततण्डुला, Peetutundoola, पुत्रप्रदा, Pootrupruda, बुहूपुला, Buhoophula, गोधिनी, Godhinee, कपटेश्वरी, Kuputeshwuree, किन्ना, Kinna, कटुवार्ताको, Kutoovarttakee, क्षेत्रजा, Kshetruja.

*Teling.* Nella Mollunga.

This is by far the most common species I know; every soil and situation seems to suit it equally well; it is in flower all the year round, and often perennial.

*Stem* none, but numerous irregular, woody, diffuse, two-forked branches spread on the ground, or near it; *young shoots* covered with stellate down; all the branches thickly armed with strong, sharp, compressed, somewhat recurved prickles.—*Leaves* alternate, petiolated, oval, much scalloped, or slightly lobate; both sides covered with stellate down, and the veins armed with straight prickles.—*Flowers* as in *S. longum*, except that here the raceme is sometimes wanting.—*Berry* perfectly globular, smooth, about an inch in diameter, colour varying according as they have been exposed to the sun, or sheltered; in the former case they are yellow, in the latter white;

\* Seems to be *S. agreste*, Roth, nov. sp. 130.—N. W.

the Telinga people give the name of *nella mollunga* to the former, and *tella mollunga* to the latter.

*Obs.* The fruits are much esteemed by the natives; all tribes eat them freely in their curries, for which reason the plant is often found cultivated in the Circars.

There is another sort, so exceedingly like this in almost every respect, that it was long before I discovered they were distinct; the chief distinguishing marks are, the leaves in this are longer, smoother, and deeply lobated, with the lobes sometimes scalloped, or sub-lobate, and the prickles much more numerous, longer, sharper and all perfectly straight.

12. *S. Jacquinii*, Willd. sp. i. 1041.

Biennial, armed, angular, creeping. *Leaves* oblong-laciniate, armed on the sides with straight spines. *Calyx* armed. *Berries* globular, smooth, variegated.

*Sung.* निदिग्धिका, Nidigdhika, निर्दिग्धा, Nirdigda, स्पृशी, Sprishēe, दुःसर्षा, Doosspursha, व्याघ्री, Vyaghree, वृहती, Vrihatee, कण्टकारिका, Kunthukarika, कण्टकारी, Kuntukaree, कण्टालिका, Kunthalika, कण्टाकिनो, Kunthakinee, प्रचेदनो, Pruchodunee, कुली, Koolee, क्षुद्रा, Kshoodra, राष्ट्रिका, Rashtrika, धावनो, Dhavunee, दुष्प्रधर्षिणी, Dooshpradhurshinee, क्षुद्रकण्टिका, Kshoodrukuntika, बृहकण्टा, Buhookanta, क्षुद्रकण्टा, Kshoodrukunta, क्षुद्रफला, Kshoodruphula, चित्रफला, Chitru-phula.

*Beng.* Kanthakaree.

A native of Bengal, where it is generally found on road sides near villages. It is in blossom, and produces ripe fruit most part of the year.

*Root* at least biennial.—*Stem* none, but several, flexuose, ramous branches, spreading close on the ground, for an extent of some feet, often striking root at the insertion of the leaves; angular, nearly void of pubescence.—*Leaves* frequently in pairs, oblong, pinnatifid,

or laciniate, smooth, but armed on both sides with long, strong, straight spines.—*Racemes* between the leaves, and almost as long, bearing four, five, or six alternate, pedicelled, large, bright blue flowers.—*Calyx* armed with straight spines.—*Berries* spherical, size of a large gooseberry, very smooth, drooping, while immature variegated with green and white, when ripe with different shades of yellow only.

1S. *S. indicum*, Willd. sp. i. 1042.

Shrubby, armed, very ramous. *Leaves* ovate, lobate, downy, armed on both sides. *Racemes* leaf-opposed. *Calyx* armed. *Berries* erect, round, smooth.

*Sung.* वृहती, Vrihutee, महतोक्रान्ता, Muhuteekranta, वार्त्ताकी, Varttakee, सिंहिका, Singhika, कुली, Koollee, सौराष्ट्रिका, Sourash-trika, स्थूलकण्टा, Sthoolukunta, भण्टाकी, Bhuntakee, क्षुद्रभण्टाकी, Kshoodrubhuntakee, बज्रपत्रो, Bujhooptree, कण्टतनु, Kuntutunoo, कण्टालु, Kuntaloo, कट्वला, Kutwula, तोरखो, Torunee, वनवृन्ताकी, Vunuvrintakee, महती, Muhutee, महोटो, Muhotee, महोटिका, Muhotika, हिङ्गुली, Hingoollee, राष्ट्रिका, Rashtrika, सिंही, Singhee, दुष्प्रधर्षिणी, Dooshprudhurshinee.

*Beng.* Vyakool, Vyakoor, Goorkamai.

*Cheru-chunda*, *Rheed. mal.* ii. t. 56.

*Solanum frutescens*, &c. *Burm. Zeyl.* p. 220. t. 102, is a pretty good representation of this plant, but I think Dillenius's *S. indicum spinosum flore boragineo* t. 270. f. 349 must have been taken from a very different species, the flowers being much too large, and the leaves too deeply divided for our East Indian plant.

*Trunk* trifling, but the branches are numerous, ligneous, and perennial, forming a large, very ramous shrub of several feet in height, armed with numerous very acute, somewhat recurved spines; the young parts are downy.—*Leaves* solitary, or in pairs, petioled, ovate, lobate, downy, and armed with a few straight spines on both sides,

from two to four inches long.—*Racemes* between or opposite to the leaves, supporting several long-pedicelled, middle-sized, pale blue flowers.—*Calyx* deeply five-cleft, armed.—*Berries* erect, round, smooth, size of a marrowfat pea; while immature variegated with deeper and lighter green, when ripe with deep orange yellow.

*Obs. by N. W.*

I have found it at Penang and Singapore. At Silhet it is common.—N. W.

14. *S. trilobatum*, Willd. sp. i. 1049.

Shrubby, scandent, armed with recurved, acute prickles. *Leaves* ovate, three-, four-, or five-lobed, smooth. *Racemes* terminal, or between the leaves. *Berries* drooping, round, smooth.

*Teling*. Oochinta-kura, kura means esculent, the leaves being one of their favorite pot-herbs.

*Solanum trilobatum*, Burm. ind. 55. t. 22. f. 2.

Compare with Lamark's *S. acetosifolium*.

A native of the Coast of Coromandel, particularly the northern Circars where it is found in abundance on the road sides, running over bushes, upon low trees, or whatever support it meets; for it is by far too long and slender to support itself. In flower and seed the whole year.

*Stems* and larger *branches* ligneous, scandent; armed with numerous, very sharp, recurved prickles, otherwise perfectly smooth; general extent from one to two fathoms, and often very ramous.—*Leaves* scattered, remote, petioled, sub-ovate, three-, four-, or five-lobed, smooth, of a shining green on both sides.—*Petiols* and veins armed.—*Peduncles* leaf-opposite, solitary, or accompanied with a single, one-flowered pedicel; armed; few-flowered.—*Flowers* large, bluish-purple.—*Germ* two-celled.—*Berries* of the size and appearance of a red currant, smooth, drooping.

15. *S. hirsutum*, R.

Annual or biennial, ramous, prickly, and hairy. *Leaves* double,



one of the pair smaller, ovate-cordate, angle-lobed, *Calyx* unarmed. *Berry* round, very hairy, four-celled.

*Ana-Chunda*, Rheed. mal. ii. 65. tab. 35.

*Sung.* चन्द्रहासा, Chundruhasa, लक्ष्मणा, Lukshmuna, क्षेत्रदूतिका, Kshetrudootika, गर्भदा, Gurbhuda, चन्द्रभा, Chundrubha, चन्द्रा, Chundra, चन्द्रमुष्पा, Chundrupoosha, प्रियङ्करो, Priyunkuree, निसेहफला, Nisnehuphula, रामा, Rama, सितकण्ठा, Situkunta, मुहौषधि, Muhoushudhee, गर्दभी, Gurdubhee, चन्द्रिका, Chundrika, चाद्री, Chandree, नाकुली, Nakooli, दुर्लभा, Doorlubha, रासा, Basna.

*Beng.* Ram-begoon,

Is a scarce plant, grows in the country about Calcutta, and is found in flower and fruit in August.

*Root* perennial.—*Stem* scarcely any, but many sub-ligneous branches covered with much down, and armed with innumerable, small, erect spines.—*Leaves* double, as in several of the *Physali*; petioled, one of the pair always much larger than the other, but it is from the axils of the smallest that the branchlets issue; they are obcordate, irregularly angle-lobed; the upper surface is thickly covered with much erect, soft hair, on the underside it is more distinctly stellate, and whitish; *nerve* and larger *veins* armed on both sides with strong straight prickles, the largest from six to nine inches long, and from four to six broad, the smaller about half the size.—*Petioles* round, hairy, prickly; those of the large leaves half their length, and coloured on the upper side; those of the smaller ones about one-fourth part of their length.—*Umbel* generally opposite, and below the leaves, simple, few-flowered.—*Peduncles* and *pedicels* short and hairy, but not prickly.—*Flowers* white, pretty large.—*Calyx* hairy, otherwise unarmed.—*Corol* very hairy on the outside.—*Anthers* sessile, conical. *Germ* hairy.—*Berries* the size of a nutmeg, round, very hairy, four-celled, as in *Datura*.

## Obs. by N. W.

This is *lasiocarpum*, Dun. which I have met with on sandy shores at Penang and Singapore, blossoming from August to December. I have also had specimens from Silhet, where it is called *Goomeet*. I take Loureiro's *mammosum*, fl. cochinch. ed. Willd. i. 162. (not Linneus's) to be this plant.—N. W.

## Additional species by N. W.

16. *S. farinosum*, Wall.

Shrubby. Branches armed with short, conical, straight prickles, densely tomentose, mealy and white, as are also the under surface of the leaves, the petiols, and inflorescence. Leaves alternate, oblong-lanceolate, entire, acuminate, smooth above, together with the petiols unarmed. Corymbs lateral, becoming terminal, dichotomous, with nodding, tomentose flowers.—Calyx five-toothed. Berries round, smooth.

Specimens are preserved in Dr. Heyne's herbarium, labelled "*S. argenteum* ;—*Babobad*" which name has been applied already to another species.

Appears to be a large shrub.—Branches thick, woody, round, irregularly beset with short, straight, slightly compressed prickles, which are yellow and lucid at the apex; extremity thickly covered with white, mealy, stellate, separable tomentum, as are also the petiols, the under-side of the leaves, and the inflorescence; younger ones unarmed.—Leaves alternate, approximate, oblong-lanceolate, from six to eight inches long, finely acuminate, perfectly entire, acute at the base, smooth above, very white and mealy underneath, with a strong rib, alternate nerves and reticulate veins; when young tomentose on both sides.—Petiol from half an inch to an inch long, round.—Corymb lateral, becoming terminal, erect, peduncled, dichotomous. Flowers very numerous, crowded, drooping, on short peduncles.—Calyx five-toothed, acute, mealy, as is also the outside

of the *corolla*; *laciniae* lanceolate, acute.—*Anthers* erect, conniving, biporous.—*Berry* round, smooth, apparently yellow.—N. W.

17. *S. stramonifolium*, Jacqu.

Shrubby, erect. *Branches*, *petiols* and *leaves* sparingly beset with strong, flattened prickles. *Leaves* alternate or geminate, ovate, unequally cordate, deeply sinuate-lobate, with stellate pubescence on both sides. *Corymbs* lateral, bifid, unarmed, with glandular, slightly viscous pubescence. *Corolla* flat, with undulate *laciniae*. *Berry* round, smooth; on thickened, clavate *peduncles*.

Beng. Gota begoon.

This is an exceedingly common plant in Bengal, where it grows near the habitations of men; in blossom and fruit the whole year.

I am doubtful if this plant ought not rather to be referred to *S. torrum*, Sw.—N. W.

18. *S. crassipetalum*, Wall.

Shrubby, erect, unarmed. Younger branches and leaves sub-villous. *Leaves* elliptic-ovate, acuminate, irregularly repand, unequal, decurrent on their slender petiols; sometimes geminate. *Flowers* fascicled, axillary. *Corolla* very thick and fleshy, rotate, flat. *Calyx* campanulate, with five subulate, remote teeth, intermixed with two or three smaller ones. *Berry* round, smooth.

I found this on Chundra-giri and other mountains in Nipal, in flower during the rainy season.

A shrub, from one to three feet high. *Branches* dichotomous, round, slightly flexuose, obscurely thickened at or under the insertion of the petiols, pubescent, when young villous, with soft pellucid articulated hairs.—*Leaves* alternate, sometimes geminate, from ovate to elliptic, acuminate, margins entire, often irregularly repand, ciliate; sides unequal, one being frequently broader than the other, base attenuate and acute; nerved and veined; pubescent above, villous underneath; varying considerably in size, from five to nine inches long.—*Petiol* an inch to two long, slender, furrowed, margin-

ed from the slightly decurrent base of the leaf.—*Flowers* axillary, fascicled, nodding.—*Peduncles* villous, clavate, about an inch long, six or eight in each axilla.—*Bractes* none.—*Calyx* campanulate, truncate, five-toothed, villous, coloured; teeth long, subulate, fleshy, distant, erect, sub-decurrent, mostly with two or three smaller ones between them.—*Corolla* extremely thick and fleshy, smooth, shining, purple or white, rotate, about five lines in diameter, rather larger than the calyx, with a very short tube, and ovate, acute *lacinae*, which are valvate with introflexed margins during the aestivation.—*Filaments* very short. *Anthers* thick, biporous, erect, smooth, purplish.—*Ovarium* oblong, smooth, bilocular. *Stigma* sub-capitate, small.—*Berry* smooth, globular, bright scarlet, half an inch in diameter.

*Obs.* This species is remarkable on account of its exceedingly thick and fleshy corolla, which is in general purplish. It varies much in the size of all its parts, chiefly the leaves.—N. W.

#### 19. *S. lysimachioides*, Wall.

Sub-herbaceous, diffuse, creeping, pubescent, with adscending branches. *Leaves* geminate, ovate, acute, entire. *Flowers* solitary, interpetiolar. *Calyx* from eight to ten-toothed, teeth long, spreading, unequal. *Corolla* large, flat, deeply divided. *Berry* globular, soft, red.

*S. biflorum*, Lour. *cochin.* ed. Willd. i. 159?

I have found this species on Sheopore, Chundra-giri, and at Chitlong, in flower during the rains, with ripe berries in January and February.

*Roots* long, filiform, fibrous.—*Stems* slender, round, creeping, as well as the other parts sparingly beset with soft, spreading hairs; *branches* ascending, filiform, simple, a foot or two long.—*Leaves* in remote pairs, ovate, cuspidate-acute or sub-acuminate, acute at the base, from one to two inches long; margins most entire, gibbous, rather unequal, somewhat repand, ciliate, with capillary nerves and

veins underneath; pubescent on both sides: one of the pair generally smaller than the other.—*Petiol* slender, an inch long, a little margined at top from the decurrent base of the leaf.—*Flowers* large, white, sweetly fragrant, a little nodding.—*Peduncles* solitary between the bases of the geminate petiols, shorter than they are, clavate, angular, a little hairy.—*Calyx* spindle-shaped, somewhat hairy, eight- or ten-ribbed; eight- or ten-toothed; *teeth* long, subulate, somewhat unequal.—*Corolla* twice as large as the calyx, nearly an inch in diameter, sub-caraccose, white, rotate, with a very short, purplish tube; deeply divided into five lanceolate, acute lacinixæ, which have a few hairs on the outside, their base widened and obscurely auriculate or hastate, the margins slightly inverted.—*Anthers* large, erect, yellow, conniving, biporous, on subulate, purple *filaments*.—*Style* capillary, considerably longer than the stamina.—*Stigma* minute, round. *Berry* scarlet, fleshy and soft, round, almost as large as a gooseberry; its top pointed with the remainder of the style, its base supported by the persistent calyx, apparently one-celled.—*Seeds* numerous, white, smooth, dotted, compressed, sub-orbicular, with one side nearly straight. *Perisperm* fleshy. *Embryo* cylindric, arcuate-convolute.—N. W.

20. *S. ? callicarpoides, Wall.*

Arboreous, unarmed, densely hoary with stellate tomentum. *Leaves* broad-ovate, acuminate, entire, becoming smoother above; sometimes opposite. *Corymbs* axillary, spreading. *Calyx* almost entire. *Berry* five-celled? ten-seeded?

Malay, *Kutipong bissee*.

A native of Bencoolen, and found there by the late Mr. Jack who communicated the following description to me.

A tree. *Branches* hoary, with stellate tomentum.—*Leaves* alternate, sometimes opposite, petiolate, large, broad-ovate, acuminate, entire, the adult rather smooth above (the tomentum being deciduous), villous and hoary beneath.—*Peduncles* axillary, bearing large,

spreading corymbs (like some of the *Callicarpæ*); together with the *pedicels* and *calyx* covered with a furfuraceous tomentum, composed of stellate hairs.—*Bractes* linear.—*Calyx* inferior, tubular, obsoletely five-toothed.—*Corolla* purplish, paler without; *tube* twice as long as the calyx; *limb* sub-erect, five-parted; *segments* oblong.—*Stamina* five, exsert, attached to the corolla. *Anthers* long, linear, purple, two-celled, opening at the top by two pores. *Style* longer than the stamens, clavate, somewhat declinate. *Stigma* truncate. *Berry* superior, globular, five-celled? ten-seeded?—Jack's Mss.

*Obs. by N. W.*

My late friend expressed considerable doubt respecting this plant which he says has wonderfully the habit of a *Callicarpa*. The berries were for the most part so injured by an insect that he had difficulty in accurately determining the number of their seeds. I have not seen any specimen of it.—N. W.

*CAPSICUM. Schreb. Gen. N. 338.*

*Corol* wheel-shaped. *Anthers* converging. *Berry* superior, juiceless, from two to three-celled.

1. *C. purpureum, R.*

Shrubby. *Leaves* ovate-lanceolate. *Peduncles* solitary in the divisions of the branchlets; after the blossom drops erect. *Berry* erect, ovate, dark purple.

In 1796, I found a single plant of this species in the Garden, but from whence it came I could never learn; most likely from the Molucca Islands. The seeds have for these thirteen years continued to produce, in all situations, plants exactly the same as the original one; this circumstance, with the general colour and erect ovate fruit, leaves little room to doubt its being a distinct species.

*Stem* short, branches numerous, dichotomous; *young shoots* almost four-sided, and deeply tinged with dark purple; whole height from two to four feet.—*Leaves* solitary at the divisions of the branches, or in pairs where the branches do not divide, petioled, ovate-lanceolate; they are also tinged with the prevailing dark purple colour of the whole plant, particularly the nerves and veins.—*Peduncles* solitary in the divisions of the branches, as long as the petiols.—*Flowers* a beautiful purple, drooping.—*Berry* ovate, erect, of a dark-purple till ripe, then of a dull reddish colour, generally three-celled, but the partitions are often discontinued towards the apex.

The envelope of the seed is rather less acrid than that of the other sorts in use at our tables.\*

2. *C. annuum*, Willd. sp. i. 1050.

Shrubby. *Leaves* ovate-lanceolate. *Peduncles* solitary. *Flowers* drooping. *Fruit* oblong, reflex.

This does not appear to be a native of India, as the Hindoos have no name for it, nor is it even found in their gardens. In India the *Capsicums* are all shrubby, but produce so badly after the first year, and begin to look so scraggy, that they are seldom suffered to remain longer than one season.

3. *C. grossum*, Willd. sp. i. 1051.†

Shrubby. *Leaves* ovate-oblong. *Peduncles* solitary, one-flowered, drooping. *Fruit* reflex, swelled into various shapes.

*Beng.* Kaffree-murich.

Kaffree-chilly is the name by which this sort is generally known amongst Europeans; the plant does not appear to me to be a native of India. The thick fleshy skin of this species is but triflingly acrid, and a palatable condiment is made of them.

\* When the fruit is rubbed it smells something like the black currant; even the taste has a faint resemblance to the flavour of that fruit.—N. W.

† This sort is so generally cultivated in Nipal, as is also *frutescens*, that I believe them both to be natives of that country. The former bears very large and beautiful fruit.—N. W.

4. *C. frutescens*, Willd. sp. i. 1051.

Shrubby. *Leaves* ovate-lanceolate. *Peduncles* solitary. *Flowers* drooping. *Fruit* tapering, curved, reflex.

*Beng.* Lal gachh Lunka murich, or Lal Lunka murich.

*Hind.* Lal gachh murich.

There is a pointed variety, with the fruit yellow, or of a bright orange colour when ripe, which the Hindoos call simply *gachh murich*, it is the sort most used; particularly when dried, in which state it is to be found in every market.

5. *C. minimum*, R.

Shrubby. *Leaves* ovate-cordate. *Peduncles* in pairs. *Flowers* drooping. *Calyces* with subulate, spreading teeth. *Fruit* sub cylindrical, erect.

*Beng.* Dhan Lunka murich.

East Indian Bird chilly or *Cayenne-pepper capsicum*.

6. *C. cerasiforme*, Willd. spec. i. 1051.

Shrubby, fruit globular.

I doubt much whether this be a native of India, for I have only found it in the gardens of the curious.

## STRYCHNOS. Schreb. Gen. N. 339.

*Calyx* five-parted. *Corol* funnel-shaped. *Germ* two-celled, ovula many, attached to the middle of the partition. *Berry* superior, one-celled. *Seeds* nestling in soft pulp. *Embryo* furnished with a perisperm, and the radicle pointing to the receptacle, now obliterated (centripetal.)

1. *S. Nux-tomica*, Willd. sp. i. 1052. Roxb. Corom. i. 4.

*Leaves* opposite, three- and five-nerved, oval, lucid. *Berries* many-seeded.



Cariram, *Rheed. mal. i. t. 37.*

*Sung.\** दोर्घपत्रकः, Deerghuputruka, कुपोलुः, Koopeeloo, कालपोलु, Kalupeeloo, कालपोलूक, Kalupeelooka, काकपोलुकः, Kakupeelooka, कुलकः, Kooluka, कालतिन्दुकः, Kalutindooka, विषतिन्दुः, Vishutindoo, मर्कटतिन्दुकः, Markutatindooka, काकतिन्दुकः, Kakutindooka, काकेन्दुः, Kakendoo, काकाण्डः, Kakanda, कालाण्डः, Kaanda, काकस्फूर्जुः, Kakusphoorjoo, कालाह्वः, Kalahwa, कालबीजकः, Kauveejuka.

*Beng.* Koochila.

*Teling.* Musadi.

A middling sized tree, common on almost every part of the coast of Coromandel; in flower during the cold season.

*Trunk* short, often crooked, but pretty thick. *Branches* irregular, both are covered with smooth, ash-coloured bark; *young shoots* highly polished, deep green. *Wood* white, hard, close-grained, and bitter.—*Leaves* opposite, short-petioled, oval, shining, smooth on both sides, entire, from three to five-nerved, or rather between that and triple, or quintuple, differing in size from one and half to four inches long, and from one to three broad.—*Stipules* none.—*Flowers* small, greenish-white, collected on small, terminal corymbs.—*Calyx* five-toothed, permanent.—*Corol* infundibuliform, as in the genus.—*Filaments* scarcely any, or exceedingly short, inserted over the bottom of the divisions of the corol. *Anthers* oblong, half within the tube, and half out.—*Germ* two-celled, with many *ovula* in each, attached to the thickened centre of the partition. *Style* the length of the tube of the corol. *Stigma* capitate. *Berry* round, smooth, size of a pretty large apple, covered with a smooth, somewhat hard shell, of a rich,

\* Those of the above synonyma which are in the *Umura Kosha* are by Mr. Colebrooke attributed to *Diospyros melanoxylon*. Most of the pundits are of the same opinion, probably because Tindoo, one of them, is the name of *D. glutinosa*. It is not unlikely that the opinions of the pundits, joined to the similarity of names led him to this conclusion. These words are however expressly stated in the *Bhava-prukasha* to be the names of the *Koochila*, which is universally acknowledged to be this plant. *Ed.*

beautiful orange colour when ripe ; filled with a white, soft, gelatinous pulp — *Seeds* several, immersed in the pulp of the berry.

The wood of this tree being hard and durable is used for many purposes by the natives. It is exceedingly bitter, particularly that of the root, which is used to cure intermitting fevers, and the bites of venomous snakes; when that of *Naga musadi* cannot be had. The seeds are employed in the distillation of country spirits, to render them more intoxicating. The pulp of the fruit seems perfectly innocent, as it is greedily eaten by many sorts of birds.

2. *S. potatorum*, Willd. sp. i. 1052. Corom. pl. 1. N. 5.

*Leaves* opposite, from ovate to oval, smooth, pointed. *Bark* deeply cracked. *Berries* one-seeded.

*Sung.* पयःप्रसादि, *Puyuprusadi*, कतकं, *Kutuka*, कत्तकं, *Kutuka*, अम्बुप्रसादः, *Umbooprusada*, कटुः, *Kutoo*, कतः, *Kuta*, तित्तुफलः, *Tiktuphula*, रूच्यः, *Roochya*, छेदनोयः, *Chheduneeya*, गुच्छफलः, *Goochhaphula*, कतफलः, *Kutuphula*, तित्तुमरिचः, *Tiktu-muricha*, तोयप्रसादनं, *Toyuprusaduna*, अम्बुप्रसादनं, *Umbooprusaduna*.

*Beng.* and *Hind.* *Nirmulee*.

*S. potatorum*, *Asiat. Res.* xi. p. 178.

*Teling.* *Induga*.

*Tam.* *Tettan-kotta*.

*Eng.* *Clearing-nut*.

This species grows to be a larger tree than *Nux-vomica*. It is much scarcer, being only found amongst mountains and woods of great extent. It flowers during the hot season.

Dr. König's description of this tree in the *supplementum plantarum* of Linneus, page 148, is so perfect, as to leave me little to add. the only observation I have to make is that the leaves cannot be said to be either three- or five-nerved.

*Stipules* entire, connecting.—*Corymbs* from the extremities of the

last year's shoots, round the base of this year's, small, bearing in ternary order, many, small, erect, fragrant, greenish-yellow flowers.—*Filaments* rather longer than in *Nux-vomica*.—*Germ* and contents as in *S. Nux-vomica*.—*Berry* shining, black when ripe.

The wood of this like that of the former is hard and durable, and is used for various economical purposes.

The pulp of the fruit, when ripe, is eaten by the natives; to me the taste is rather disagreeable.

The ripe seeds are dried, and sold in every market to clear muddy water. The natives never drink clear well water if they can get pond or river water, which is always more or less impure according to circumstances. One of the seeds is well rubbed for a minute or two round the inside of the vessel containing the water, generally an unglazed earthen one, which is then left to settle; in a very short time the impurities fall to the bottom, leaving the water clear and, so far as I have been able to learn, perfectly wholesome. These seeds are constantly carried about by the more provident part of our officers and soldiers, in time of war, to enable them to purify their water. They are easier to be obtained than alum, and are probably less hurtful to the constitution.

### 3. *S. colubrina*,\* Willd. sp. i. 1052.

Scandent; *tendrils* simple. *Leaves* from oval to oblong, obtuse. *ly* acuminate, triple-nerved, polished. *Berries* many-seeded.

\* The following note was written by Dr. Roxburgh several years before this species was discovered in Bengal, and attached to *S. Nux-vomica*. I have therefore thought it best to insert it here.—*Ed.*

There is a tree, but exceedingly rare on this coast, which the Telingas call *Naga musadi* (*Naga*, or *Tansoopaum* in the Telinga language, means the *Cobra de Capella*, or *Coluber naga* of Linneus, *Tansoo* means dancing, and *pau* a serpent; this sort being famous for erecting its head and moving it from side to side at the sound of music.) I have only once met with this tree, and then it was pointed out to me by a Telinga Doctor. The tree had been cut down, and carried away, from the only remaining one that I could find, some shoots had sprung up. The leaves upon these were opposite, short-petioled, obtuse-lanceolate, three-nerved; about two, or two and half inches long, by three-fourths of an inch broad. The  
petiols

*Modira* Caneram, *Rheed. mal.* 8. t. 24.

Beng. Koochila-luta.

Found by Mr. M. R. Smith, indigenous on the hills near Silhet, where it blossoms in April, and the seeds ripen in September and October.

*Stem* of great size, often from eight to twelve inches in diameter; the wood hard, intensely bitter and of a light grey colour; this with its numerous ramifications climbs over the highest trees. *Bark* ash-coloured, more or less scabrous, according to the age and size of the part of the young shoots, smooth and green.—*Tendrils* lateral, simple, becoming thick and lignous.—*Leaves* opposite, short-petioled, from oval to oblong, entire, obtusely acuminate, triple-nerved; *nerves* extending to the apex, texture rather thin; glossy; from three to six inches long, by two or three broad.—*Stipules* none.—*Corymbs* terminal, small; composed of two or three pairs of opposite, few-flowered, short, villous branches.—*Flowers* small, greenish yellow, in a sub-ternary order.—*Bractes* one under each division and subdivision of the corymb, tapering, villous.—*Calyx* five-parted, clammy, with glandular pubescence.—*Corol* infundibuliform, smooth. *Tube* cylindric. *Border* five-parted; *segments* linear-oblong, spreading.—*Filaments* five, short, inserted into the mouth of the tube of the corol under the fissures of its border. *Anthers* sub-sagittate.—*Germ* superior, ovate, smooth, two-celled, with many *ovula* in each, attached to a fleshy ridge down the middle of the partition. *Style* the length of the corol. *Stigma* capitate.—*Berry* often as large as an orange, round, in the advanced state one cell only can be detected. *Cortex*

petiols were very short, and connected at their insertions by a membrane. I took up this root with the greatest care, cut off the upper part from whence the shoots grew, and planted it in my garden, but it soon perished. From the above circumstances I am inclined to think there is a species different from the third, or scandent species called *Colubrina*, as well as from the *Nux-vomica* tree, which yields the real or at least another sort of the *Lignum colubrinum*. The wood of the root of this sort is esteemed by the Telinga Physicians an infallible remedy for the bite of the *Naga*, as well as for that of every other venomous snake. It is applied externally, and at the same time given internally. It is also given in substance for the cure of intermitting fevers. Roxb. Mss.

H h

rather hard and brittle; colour from a bright yellow to a dirty looking mixture of yellow and rough brown. *Pulp* gelatinous and yellow.—*Seeds* from two to twelve, orbicular, much flattened as in the *Nux-vomica*, peltate, nearly an inch broad. *Integuments* two; the *exterior* one thin, but tough, and most densely clothed with soft, short hairs, like the softest velvet; the *interior* one a very thin brown membrane.—*Perisperm* conform to the seed, united round the margins, the middle free, resembling two cotyledons, horny.—*Embryo* straight, much smaller than the perisperm, and lodged close to the umbilicus, which may be readily known by the hair being longer at that part, forming a tuft round it. *Cotyledons* cordate, three-nerved. *Radicle* oval, pointing to the umbilicus, (centripetal.)

*Additional species by N. W.*

4. *S. axillaris*, Colebrooke.

*Leaves* ovate, acuminate. *Tendrils* axillary, thickened. *Berry* oval, one-seeded.—Colebr. in Linn. trans. xii. 351, and 356. t. 15.

Native of the mountainous countries north and east of Silhet, in Bengal, where it blossoms in the hot season, and ripens its fruit in the beginning of the rainy season.—Beng. *Hur-cuchila* or *Hár-cuchila*. Colebr. l. cit.

*Obs.* The excellent account which has been given of this interesting plant by Mr. Colebrooke, renders it unnecessary for me to furnish any detailed description here. But as I received splendid specimens last year from Silhet, gathered by Mr. Francis De Silva, the successor to the late Mr. Smith, I am enabled to make the following few additions: *Stem* moderately thick, enlarged at the divisions, round, covered with smooth brownish bark.—*Branches* numerous, approximate, divaricate, dichotomous or opposite, slender, while young pubescent and somewhat greyish.—*Leaves* sub-bifarious, twice as long as their interstices, glossy while young, villous, mostly tripli-nerved, sometimes also tri-nerved, in which case two fine sub-marginal nerves issue from the base of the common rib; all

the nerves simple; beautifully reticulate with transversal, capillary, parallel veins; the axills of the principal nerves, as also the short petiols and the tendrils pubescent; acumen very long and slender; they are of pretty equal size, generally about three inches long. *Tendrils* alternate, invariably *axillary* and *simple*; their curved, sub-spiral, thickened, acute end scarcely reaching beyond the middle of the leaf.—*Stipules* none except a pubescent annular margin, which connects the base of the petiols.—*Fascicles* crowded, round, twice as long as the petiols.

However much this species resembles *S. Teute* of M. Leschenault de Latour, whose description and figure are now before me (in *Annal. du Mus.* xvi. 79. t. 23.) I cannot but consider them as distinct; the tendrils in that being always opposite to and supplying the place of a leaf, while in ours they occupy invariably *alternate* axills.—This is corroborated by the following extract of a letter from my worthy friend, dated Madura, the 14th May, 1820, in reply to one in which I had particularly requested his opinion on the subject.—“*Le Strychnos axillaris* de M. Colebrooke me paroît identique avec mon *S. Tieute*. Ils ont le même port, la même apparence; et la légère différence, qui peut exister entre les feuilles des deux plantes, qui ont servi à la description de M. C. et de la mienne (différence qui peut être le résultat de l’âge, du sol, ou du climat) ne peut point balancer le caractère très important de *vrilles épaisses (cirrhi incrassati)*. Il y a dans le dessin que vous m’avez envoyé, et dans la description de M. Colebrooke une erreur remarquable, et qu’il convient de rectifier; c’est celle de *vrilles axillaires*. J’ai observé dans le *S. Tieute*, que chaque vrille tenoit constamment la place d’une feuille, et étoit, par conséquent opposée à l’autre. S’il en étoit autrement pour le *S. axillaris*, l’espèce seroit alors bien distincte; mais je pense qu’il y a erreur.”—N. W.

### 5. *S. bicirrhosa*, Leschen.

*Stem* climbing. *Leaves* elliptic, cuspidato-acute, triple-nerved.

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*Tendrils* leaf-opposed, bifid, with thickened divisions. *Berry* globular, one-seeded.

Native name *Kousi-Kandiera*.

Found by M. Leschenault in the forests near Koudracotta, about twenty miles south of Tanjore, with unripe fruits. He has kindly communicated a specimen with the following description.

"*Stem* scandent, sarmentose. *Branchlets* horizontal.—*Leaves* opposite, short-petioled, elliptic or sub-ovate, acuminate, three-nerved, smooth.—*Tendrils* leaf-opposed (occupying the place of a leaf), bifid, with slightly thickened ends; there is constantly a pair of squamiform *bractes* under their divisions."

Obs. by N. W.

*Branches* opposite, shining, ash-coloured, minutely and most copiously dotted; otherwise perfectly smooth, as are all the other parts. *Leaves* about three inches long, sometimes lanceolate, mostly acute, occasionally obtuse, but always terminated by a small cuspidula. They are regularly tri- and triple-nerved; the outer nerves, proceeding from the base, being very fine, sub-marginal.—There is invariably a pair of opposite, stipulary, triangular, pointed, adpressed bractes under the insertion of the branches, and a solitary one under each tendril, and besides those small lanceolate ones under the divisions of the tendrils, noticed by my friend in his description, there is a subulate process issuing from the bifurcation itself.—M. Leschenault has not seen the flowers, nor has he succeeded in obtaining any information respecting the use of the plant.—N. W.

### SERISSA. Juss.

*Corol* one-petalled, funnel-shaped; throat ciliate; *segments* of the border sub-trilobate. *Berry* inferior, two-seeded.

1. *S. fatida*, Willd. sp. i. 1061.

*Dysoda fasciculata*, Loureiro cochinch. 181.

*Lycium japonicum*, Thunb. Jap. 93. t. 17.

*Lycium fatidum*, Linn. suppl. 150.

*Lycium indicum*, Retz. obs. ii. p. 12.

Introduced into our gardens in India from China which accounts for the natives having no name for it. In the botanic garden at Calcutta it blossoms the whole year round, but never produces fruit; the flowers being constantly double.

### ARDISIA. Schreb. Gen. N. 1735.

*Calyx* five-leaved. *Corol* hypocrateriform. *Germ* superior, one-celled, one-seeded, attachment inferior. *Stigma* subulate. *Berry* superior, one-seeded. *Embryo* transversely serpentine in an ample perisperm.

1. *A. solanacea*, Willd. sp. i. 1063. Roxb. Corom. 1. 27.

Shrubby. *Leaves* alternate, oblong, entire, glossy. *Racemes* axillary, corymbiform. *Segments* of the corol ovate.

Beng. Bun-jam.

Teling. Conda-mayoor.

A small tree, or large shrub, a native of moist places in the vallies amongst the Circar mountains. In flower and seed nearly the whole year.

*Trunk* one or more from the same root, erect. *Bark* ash-coloured. — *Leaves* alternate, short-petioled, oblong, and cuneate-oblong, pointed, entire, smooth, glossy, somewhat succulent; from four to six inches long, by two or three broad. — *Racemes* corymbiform, axillary, shorter than the leaves. — *Peduncles* round, smooth. — *Pedicels* clubbed, round, smooth. — *Bractes* a concave one below each pedice. — *Flowers* pretty large, rose-coloured. — *Calyx* five-leaved; *leaflets* imbricated, concave, roundish; permanent. — *Corol* one-petalled. *Tube* exceedingly short. *Border* five-cleft; *divisions* spreading, cordate. — *Filaments* five, exceedingly short, from the bottom of the tube. *An-*



*thers* oblong, acute.—*Germ* superior, oblong. *Style* awled. *Stigma* acute.—*Berry* size of a small cherry, round, juicy, black, one-seeded.

The juice of the berries is of a very beautiful, bright red colour; upon paper it changes to a durable brown.

*Obs. by N. W.*

Sims's Bot. Mag. xl. 1677.—It grows wild at Noakote in Nipal, flowering in the month of March.—N. W.

2. *A. paniculata*, R.

Shrubby. *Leaves* cuneate-oblong, sub-sessile, entire, smooth, reflex.—*Panicles* terminal, oval, composed of many alternate, compound branches.

A large shrub, or small tree, a native of the hilly parts of Chittagong, and particularly conspicuous on account of its large reflexed leaves, (from six to twelve inches long;) and very large, elegant panicles of innumerable, lively rose-coloured flowers. Like most of the other species, it continues to blossom and ripen its seed most part of the year.

*Young shoots* thick, somewhat succulent, with smooth, clear, green bark.—*Leaves* crowded about the ends of the branchlets, sub-sessile, from lanceolar to cuneate-oblong, rather obtuse, entire, smooth, from six to twelve inches long, and from three to five broad.—*Panicles* terminal, very large, oval; composed of numerous, patent, compound branches, all are round, smooth and green.—*Flowers* very numerous, pretty large, rose-coloured.—*Bractes* oblong.—*Calyx* the border divided into five broad-ovate segments.—*Corol* sub-rotate; *segments* of the border ovate.—*Filaments* five, short, inserted into the base of the corol. *Anthers* sagittate, united into a cone.—*Germ* ovate, one-celled, containing one *ovulum* attached to the bottom of the cell. *Style* longer than the stamina.—*Stigma* simple.

*Obs. by N. W.*

This noble species is a native also of Silhet. In the botanic

garden it has attained the height of eight feet, since the year 1810, when it was introduced, blossoming in the hot and the commencement of the rainy season; the berries ripen in August—October. —The leaves on the luxuriant shoots measure full twenty inches in length, and between four and five inches in breadth towards the outer end; from thence they taper so much downwards as to be scarcely one and half inch broad at their lower third part. *Berry* globular, rather depressed, red, shining, smooth, size of a large pea; *pulp* pale pink-coloured. *Seed* round, apiculate, with a convex umbilicus at the base. *Exterior integument* (*putamen*?) crustaceous, thin, grey, marked with ramous, vascular fascicles, converging from the umbilicus upwards; the inside brown and smooth, unconnected with the end except at the base. *Inner* one brownish, lanceolated, *spongy*, attached to the albumen by numerous, very small, distinct adhesions, the vestiges of which remain after the integument has been removed. —*Albumen* cartilaginous, hard, whitish, slightly and superficially *ruminate*, with a deep impression at the base. *Embryo* milk-white, horizontal, cylindric, equalling the breadth of the albumen, or a little shorter; both its extremities slightly descending. *Cotyledons* very short, subulate. *Radicle* long, sub-clavate, directed towards the surface of the perisperm.—N. W.

### 3. *A. colorata*, R.

Shrubby. *Leaves* linear-lanceolar, entire, smooth; *veins* nearly diverging. *Panicles* terminal, (large and highly coloured,) composed of a few, decompound, expanding branches.

*Umur-kulli*, the vernacular name at Silhet, where the shrub is indigenous, and one of the most desirable species of the genus I have yet met with. It is in flower and seed the greatest part of the year.

*Trunk* erect, with numerous, smooth, expanding branches and branchlets; general height, in its native soil, about twelve feet. —*Leaves* alternate, short-petioled, linear-lanceolar, entire, acute, veins parallel, and nearly diverging from the rib, about six or seven inches long, and about two-broad. *Floral* leaves minute. *Panicles*

terminal, solitary, very large; composed of several large, compound and decompound branches; all of which with their sub-divisions are smooth, and of a pretty deep, bright red colour.—*Bractes* lanceolate.—*Cal'yx*, *corol*, &c. as in the family.—*Berries* somewhat oblate, smooth, succulent, red, size of a pea.—*Seed* solitary, of a deep yellow in the base.—*Perisperm* conform to the seed, very hard, some small rust-coloured specks on the surface, which in some places penetrate a little.—*Embryo* transverse, serpentine, &c. as in Gaertner's *Anguilaria*, 1. 372. t. 77.

*Obs. by N. W.*

I have found this species, or one very much like it on Sheopore in Nipal, flowering in April and May. My people have also brought it to me from Noakote.

It grows to the size of a small tree, ten feet high. *Branches* ash-coloured; *young shoots* and tender leaves covered on both sides with dense, scaly, purple, loose tomentum; afterwards they become perfectly smooth.—*Leaves* very numerous and close to each other towards the apex of the branches, oblong-lanceolate, from five to six inches long, acuminate at both ends, very obscurely crenulate, coriaceous; shining above, glaucous underneath, with elevated rib; while fresh veinless.—*Petiol* very short.—*Panicle* terminal, of a regular oval form, about six inches high, lifted up on a peduncle above the uppermost leaves; branches somewhat elongated, often intermixed with several lanceolar, small *floral leaves*.—*Flowers* corymbose or umbellate, smallish, red, on short, coloured pedicels.—*Calyx* almost white; *laciniæ* spreading, ovate, acute, dotted.—*Corolla* rotate, four times longer than the calyx, with acute, ovate segments.—*Anthers* bursting from the middle to the apex. *Style* longer than the corolla, red.

Should it prove a distinct species, which I shall be able to decide upon when I receive specimens of the Silhet plant, I would propose calling it *A. floribunda*.

*A. pyramidalis*, Roth. Nov. spec. 123, (excluding the synon. of

*Anguillaria pyramidalis*, Cavan. which is probably another plant) seems to be either Roxburgh's *colorata* or *paniculata*.—*A. colorata*, Lodd. Bot. Cab. v. 465, appears to me to belong rather to *A. solanacea*.—N. W.

4. *A. umbellata*, R.

Shrubby, erect. *Leaves* short-petioled, oblong, smooth, veinless, entire. *Umbels* axillary, drooping. *Calyx* five-parted. *Berries* vertically compressed.

A native of Sumatra, from thence Dr. Charles Campbell sent the seeds to this garden, where the plants thrive luxuriantly, and blossom most part of the year.

*Stem* shrubby, erect, with alternate, ascending branches; all are covered with a smooth bark; general height of the full grown shrubs about eight feet.—*Leaves* alternate, short-petioled, oblong, entire, polished on both sides, deep green, and almost destitute of veins; length from three to four inches, and about two broad.—*Peduncles* axillary, solitary, shorter than the leaves, bearing in a simple umbellet, many pretty large, drooping, rose-coloured flowers.—*Calyx* five-parted; *divisions* short, and rounded.—*Corol.* *Tube* very short; *divisions* of the border lanceolate, first recurved, then revolute.—*Filaments* short, inserted on the mouth of the tube of the corol.—*Anthers* united by their heads into a cone.—*Germ* superior, round. *Style* tapering. *Stigma* simple, appearing without the points of the anthers.—*Berry* depressed, smooth, shining black, size of a large pea, succulent; the pulp being in considerable proportion, and replete with purple juice.—*Seed* solitary, round. *Perisperm* and *embryo* as in the other species.

Obs. by N. W.

*A. litoralis*, Andrew's Repos. x. 630. *A. umbellata*, Bot. Cab. vi. 531;—Roth. Mss. in Syst. veg. iv. 514;—Roth. nov. spec. 123. —It is a common plant on the hills of Pinang, where I met with it

in flower in August and December.—The doubtful plant mentioned by Vahl, under his *A. humilis*, Symb. iii. 41, seems to belong to this species.—N. W.

5. *A. villosa*, R.

Shrubby, erect, with spreading, villous branchlets. *Leaves* lanceolate, crenulate, villous underneath. *Umbellets* terminal, compound, hairy.

A native of the forests of *Pulo-pinang*, where Mr. R. found it in blossom in July.—Compare with *Pyrgus racemosa*, *Loureir. cochinch.* 149.

*Obs. by N. W.*

I have found a shrub, rather sparingly, in Singapore, in fruit in October, which perhaps may be this species.—It rises four or five feet high, with spreading, densely villous, and hairy, round branches.—*Leaves* lanceolate, from five to seven inches long, acuminate, remotely and obtusely crenate, tapering and acuminate at the base, minutely and most copiously dotted on both sides, and clothed with abundance of soft, long, jointed hairs. *Petioles* slender, an inch or an inch and half long.—*Umbels* axillary and terminal, very villous. *Berries* globular, villous, scarcely larger than the persistent calyx, the laciniae of which are linear-lanceolate, long, acute, villous.—All the upper parts of this shrub are exceedingly thickly beset with soft hairs.—It is perhaps a distinct species which I would propose calling *A. vestita*.—*Pyrgus racemosa*, *Loureir. cochinch. ed. Willd. i. 149*, belongs undoubtedly to this genus, according to Mr. R. Brown, *prodr. nov. holl. i. 535*; but is widely different from the plant described above by Roxburgh. Mr. Brown thinks that *Bladhia*, Thunb. is a distinct genus on account of the ternate or opposite leaves; I would add their *serrated or crisped margins*.—N. W.

6. *A. lanceolata*, R.

Shrubby, with diverging branches. *Leaves* broad-lanceolar, polished. *Panicles* terminal, axillary, composed of a few simple racemes.

A native of the forests of Pulo-pinang, where Mr. W. Roxburgh found it in blossom in July.

*Leaves* alternate, short-petioled, broad-lanceolar, acuminate, smooth, entire; from six to nine inches long, and two or three broad. — *Panicles* terminal and axillary, shorter than the leaves, composed of a few diverging branches. — *Flowers* numerous, pedicelled, of a middling size, diverging. — *Bractes* solitary, under each pedicel, lanceolate. — *Calyx* deeply divided into five ovate segments. — *Corol* rotate; *segments* five, ovate-acuminate. — *Anthers* sub-sessile, sagittate, open near the acute apex on the inside. — *Germ* ovate, one-celled, containing one *ovula* attached to the bottom of the cell. *Style* length of the stamina. *Stigma* simple, acute.

*Obs. by N. W.*

I have before me a specimen with flowers of this plant, communicated by the late Mr. Jack from Pinang; it is remarkable on account of its exceedingly tough and leathery leaves; and is nearly allied to *A. paniculata*. *Elliptica* would have been a more appropriate name. — N. W.

7. *A. divergens*, R.

Shrubby, with diverging branchlets. *Leaves* sub-sessile, lanceolate, smooth, entire. *Umbellets* terminal, sessile.

A native of the Moluccas.

*Addition by N. W.*

I have had specimens of this plant gathered at Pinang by the late Mr. Jack under the name of *A. punctata*, together with the following remark, “*Branches* divaricate. *Leaves* almost sessile, ovate-lanceo-

late, dotted, entire, acuminate, base attenuated. *Corymbs* terminal, paniculate."

It appears to be a small smooth shrub.—*Leaves* measuring from four to five inches, sometimes oblong, with a distinct, arched, sub-marginal vein, which is more or less visible in all the species of this genus as it is in all the *Eugenias* and many others; marked with numerous glandular, minute, sub-pellucid dots, which terminate the reticulate veins; these too, are observable in most if not all the other species, and they are often found on the flowers and ends of the branchlets.—*Peduncles* slender, short, terminal, slightly pubescent, bearing a few small, alternate corymbs.—N. W.

8. *A. crenata*, R.

*Leaves* lanceolate, crenate. *Racemes* terminal, often compound. *Flowers* drooping.

From Pulo-pinang, where it is a native.

Shrubby, erect.—*Leaves* short-petioled, alternate, lanceolate, margins smooth, somewhat obtuse, crenate.—*Racemes* generally solitary, from the extremities of the corymbiform lateral branchlets, and always accompanied with a leaf or two; sometimes they are pro-liferous.—*Flowers* numerous, small, drooping.—*Calyx*, *corol*, *stamens* and *pistillum* as in *A. solanacea*.—*Berry* globular, smooth, size of a pea; one-seeded.

*Obs. by N. W.*

I found it very common both at Pinang and Singapore, blossoming from August to November. It must not be confounded with Ventenat's *crenulata*.—It is the same as *A. elegans*, Andr. Repos. x. 623.—N. W.

9. *A. glandulosa*, R.

Shrubby. *Leaves* lanceolar, margins coloured and glandular. *Umbellets* sub-terminal, numerous, long-peduncled, globular.

*Bun-nurukalee* the vernacular name in Sîlhet, where the shrub is indigenous, flowering in the rainy season.

*Leaves* alternate, short-petioled, lanceolar, smooth, margins coloured, somewhat repand, and strongly marked with little, elevated, dark-coloured glands on and rather under the margin; from four to six inches long, and an inch or an inch and half broad.—*Umbellets* generally from four to eight, alternate at and round the extremities of the numerous smooth branchlets, long-peduncled, few-flowered, and globular.—*Flowers* small, white, short-pedicelled.—*Calyx* five-parted, marked with ferruginous spots.—*Corol* alternate, the tube being very short; segments of the border five, round, emarginate; imbricated in the bud.—*Filaments* inserted on the base of the tube. *Anthers* large, sub-sagittate, sides firmly united, forming a little dome over the mouth of the tube.—*Germ* ovate, one-celled, and containing one ovulum, attached to the bottom of the cell. *Style* slender. *Stigma* rather enlarged, and even with the top of the anthers.

*Obs. by N. W.*

This is a large, branchy, smooth shrub. *Branches* ash-coloured; *young shoots* much elongated, leafy at the apex.—*Leaves* long-acuminate; base tapering, entire.—*Peduncles* very numerous from the apex of the branches, close to each other, spreading, filiform, naked, four inches long, a little flattened; each bearing an umbel of eight or ten small, pink flowers, dotted with numerous glandular dots.—*Laciniae* of the calyx lanceolate, acute. It may at once be distinguished from all the other species by the globular, obtuse shape of the flower buds; by their size, which is smaller than that of any of our East Indian species, and by the notched blunt corolla. The form of the inflorescence is also very peculiar.—N. W.

10. *A. macrocarpa*, Wall.

Smooth, shrubby. *Leaves* oblong, acute, greatly tapering downwards, gland-crenate, dotted. *Racemes* terminal, corymbiform, sub-



sessile. *Lacinia* of the *corolla* ovate, obtuse. *Berries* large, glo-  
bular.

Grows on most of the hills about the valley of Nipal, blossoming during the rains and ripening its fruit in winter.

A branchy, erect shrub, perfectly smooth, from five to six feet high, with greenish round branches, marked with slightly elevated lines which descend from each petiol. *Young shoots* elongated, naked, except at their apex, frequently so near to each other as to become sub-verticilled.—*Leaves* scattered, approximate, especially on the younger branches, spreading, coriaceous, shining, oblong, acute, tapering very considerably from the middle downwards, from six to eight inches long, slightly folded length-ways, of a dark green colour above, pale underneath, without nerves or veins while fresh; serrato-crenate, crenatures rounded, large, with the sinuses glandular and elevated on the upper surface, which in consequence becomes knobbed; both surfaces are marked with innumerable, unequal, minute, opaque dots, especially close to the margin, where they are elegantly disposed in a continued, sub-marginal line.—*Petiol* thickish, about an inch long, gradually widening into the decurrent base of the leaf.—*Raceme* terminal, oval, corymbose, sub-sessile, about two inches long, very slightly pubescent, sometimes with a few, short, lanceolate floral leaves.—*Flowers* on small, clavate pedicels, flesh-coloured, shining, dotted with many minute dark points.—*Corolla* about twice the size of the calyx; its *lacinia* ovate, obtuse, rather narrow at the base.—*Berry* spherical, of a beautiful vermilion colour, as large almost as a gooseberry, smooth, shining; when dry it becomes deep purple and is reduced to the size of a large pea.

*Obs.* This is a very elegant shrub both in flower and fruit. It comes near to *A. crenata*, Roxb. Its leaves are long and remarkably tapering toward the narrow base; margins beautifully crenate, glandular and knobbed; the thick elevated glands which occupy the interstices of the crenatures, rising considerably above the upper surface. The berries are very large.—N. W.

11. *A. pauciflora*, Heyne.

Shrubby, smooth. *Leaves* lanceolate, acuminate, alternate, short-petioled, entire. *Peduncles* lateral and axillary, filiform, from two to three-flowered.

Specimens are preserved in the late Dr. Heyne's hortus siccus. They are labelled "*Ardisia pauciflora*, 20th March, 1817."—No native place is mentioned; but I conjecture it to be Wynaad.

*Branches* slender, greyish-brown; *young ones* covered with ferruginous, dense, scaly tomentum.—*Leaves* alternate, spreading, lanceolate or oblong-lanceolate, from four to five inches long, tapering into a bluntish, sometimes retuse acumen; acute at the base; perfectly smooth, obscurely nerved.—*Petiols* short.—*Peduncles* very slender, filiform, three or four times longer than the petiols, from two to three-flowered.—*Pedicels* half an inch long, supported by minute, linear bractes.—*Flowers* small.—N. W.

12. *A. pedunculosa*, Wall.

Shrubby, perfectly smooth.—*Leaves* approximate, lanceolate, acuminate, short-petioled, entire. *Corymbs* axillary and terminal, long-peduncled. *Laciniae* of the corolla acuminate.

Native of Silhet, from whence I had specimens in 1820, gathered by Mr. De Silva.

*Branches* ash-coloured, angular.—*Leaves* numerous and crowded at the upper part of the branches, lanceolate, acuminate, entire, or with some obscure, remote crenatures, rather tapering at the base; from four to six inches long, obscurely nerved when dry, coriaceous; on short, channelled petiols.—*Corymbs* terminal and axillary towards the top of the branches, long-peduncled, ramous; forming a loose, sub-panicled, terminal inflorescence, which is intermixed with leaves.—*Peduncles* very slender, filiform, four inches long; *partial ones* an inch or an inch and half long.—*Flowers* reddish, sub-umbellate, on capillary, rather long pedicels.—*Laciniae* of the dotted corolla rather oblique, terminated by a subulate acumen.—N. W.

13. *A. anceps*, Wall.

Shrubby, with climbing, two-edged *branches*. *Leaves* oblong-lanceolate, acuminate, entire. *Panicles* terminal, with flattened, nearly smooth ramifications. *Style* very long.

Found in the vicinity of Silhet by Mr. De Silva, in blossom in September.

Beng. Lal Jam.

*Branches* long, slender, flattened, two-edged with sharpish margins, smooth, pale-grey.—*Leaves* alternate, lanceolate, from five to ten inches long, acuminate, acute at the base, perfectly entire, smooth on both sides, coriaceous, marked underneath with a strong middle-rib, and elevated, sub-transverse, arcuated, reticulated nerves.—*Petiol* half an inch long, channelled above, its apex slightly margined.—*Panicle* terminal, oblong, peduncled, mostly with one or two small leaves at the base; six inches long. *Peduncles* flat, alternate. *Flowers* sub-umbellate, pedicelled, small, pink-coloured.—*Calyx* with lanceolate, acute laciniae, dotted.—*Corolla* rotate, deeply divided into five ovate, acute, dotted segments.—*Style* capillary, twice as long as the corolla.—*Stigma* minute.—N. W.

14. *A. complanata*, Wall.

Shrubby, with round *branches*. *Leaves* oblong-lanceolate, acuminate. *Panicles* axillary and terminal, with villous, flattened divaricate, flexuose ramifications. *Style* very long.

Found by Mr. George Porter on the hills of the island of Pinang, in flower and fruit in the beginning of the year.\*

A rambling, sub-scandent shrub, with rounded, slender, smooth, ash-grey, *branches*; somewhat tomentose and ferruginous while

\* This active young man, who was for some years employed in the Honourable Company's Botanic garden at Calcutta as the head overseer, was obliged to accompany me to Pinang on account of severe illness. He has now charge of the school-institution and the small botanical nursery which was established there lately, and has already forwarded the most beautiful and rare collections of growing and preserved plants and seeds to me. In the progress of the work I shall very often be enabled to refer to the produce of his zealous and successful labours.—N. W.

young.—*Leaves* approximate, very spreading, oblong-lanceolate, with nearly parallel or straight, perfectly entire margins, tapering, acuminate, acute and sub-decurrent at the base, from six to eight inches long, coriaceous, smooth underneath, with elevated rib and parallel, nearly transversal nerves, which unite and are reticulate near the margins.—*Petiol* round, strong, channelled, half an inch or an inch long; slightly margined.—*Panicles* axillary and terminal, peduncled, ovate, shorter than the leaves; composed of alternate racemes of umbelled, small pink-coloured *flowers*.—*Peduncle* flattened and two-edged, divaricate, flexuose, villous, at length smooth.—*Bractes* large, linear-lanceolate, folded, recurved.—*Flowers* small, pale pink-coloured, forming globular umbellets, on short pedicels, each of which is supported by a minute bracte. *Calyx* with triangular, acute, dotted, ciliate laciniæ.—*Berry* globular, as large as a pepper-corn, dark-purple, nearly black, blunt.

*Obs.* This is exceedingly like the foregoing, and scarcely to be distinguished except in having round branches and divaricate sub-reflexed ramifications of the panicles.—N. W.

### 15. *A. tuberculata*, Wall.

Shrubby, smooth. *Leaves* entire, lanceolate-oblong, attenuate, obtuse. *Panicle* terminal, branchy, leafy, consisting of short, peduncled *racemes*—*Peduncles* flexuose, flattened.—*Rachis* cylindric, tubercled.

I have found it in forests at Singapore, in flower and fruit in October.

*Branches* smooth, covered with ash-coloured bark, slightly flexuose, with two opposite, elevated lines; the uppermost sub-compressed.—*Leaves* scattered, four inches long, smooth, leathery, shining, glandular and dotted while young, perfectly entire; base acute; apex tapering, obtuse; the uppermost or floral ones linear-lanceolate.—*Panicles* terminal, oblong, consisting of alternate, flattened, flexuose *branches*. *Racemes* an inch long, equalling their peduncles. *Flowers*

very numerous and approximate, small, pink, smooth, inserted with their short pedicels on a cylindric, thick, knobbed rachis.—*Calycine* lacinia oval, obtuse, ciliate.—*Berry* smooth, globular, as large as a pepper-corn, dark-purple.—N. W.

16. *A. lentiginosa*, Bot. Reg. vii. 533.

*Leaves* lanceolate, crenate. *Corymbs* compound. *Flowers* minutely dotted.—Edwards, l. cit.

*A. crenulata*, Bot. Cabin. i. 2.

*A. crenata*, Bot. Mag. xlv. 1950.

*A. nana*, Colebr. Mss. (according to a drawing preserved at the Hon. Company's botanic garden at Calcutta.)

A native of China; perhaps also of the Malayan peninsula and islands, it having been introduced into the botanic garden from Malacca in 1812, where it blossoms and successively ripens its fruit almost the whole year round.

This elegant little dwarf shrub has been so well figured and described, especially by Mr. Edwards, as to require no further notice here.—N. W.

17. *A. hymenandra*, Wall.

*Leaves* obovate, acuminate, grossly crenate, tapering and entire downwards. *Corymbs* lateral, leafy, with large bractes. *Lacinia* of the *corolla* sub-linear, very long. *Anthers* membrane-winged and caudate, connate into a tube.

Found on the Juntiyapoor mountains near Silhet by Mr. De Silva, flowering in March.

Seems to be a stout shrub. *Branches* remarkably thick, round, marked with many callous tubercles.—*Leaves* irregularly scattered, approximate, sub-verticillate in threes or fours, obovate, acuminate, very large, measuring from six to ten inches or more in length, as broad as a hand towards the extremity, and deeply gland-crenate; from thence gradually tapering downward and nearly entire; base rounded or somewhat acute, very narrow, sub-decurrent; smooth, dotted on

both sides; with a strong rib underneath, most elegantly reticulate, and marked with elevated, parallel, most numerous, transversal nerves, which unite by means of a double row of sub-marginal parallel veins.—*Petiol* very short, thick, margined, furrowed.—*Corymbs* lateral, from the vestiges of the fallen leaves, much shorter than they, rounded, consisting of very numerous, closely approximate, spreading umbels of large pink flowers.—*Common* peduncle strong, flat, from three to four inches long, bearing at the apex two or three oblong, sub-opposite, floral leaves, from two to three inches long, on very short, membrane-margined, widening petiols.—*Partial* ones (of the umbels) flattened; the lowermost an inch or an inch and half long, the rest becoming gradually shorter; each supported by a large, ovate, membrane-margined, deciduous bracte.—*Pedicels* about half an inch long, crowded into many-flowered umbels; each supported by an oblong, membranous, concave bracte.—*Calyx* dotted; *laciniæ* lanceolate, slightly ciliate.—*Corolla* rotate, dotted, four times as long as the calyx; *laciniæ* linear-lanceolate, acuminate, deeply divided, nearly half an inch long; during æstivation twisted, sub-cylindric.—*Anthers* sessile, large, membrane-margined; terminating with a long, membranous, delicate, lanceolate process, and firmly uniting into an oblong tube. *Ovary* ovate, small. *Style* capillary, a little longer than the tube formed by the anthers.—N. W.

### CHIRONIA. Schreb. Gen. N. 549.

*Corol* rotate. *Pistil* declined. *Stamina* inserted on the tube of the corol. *Anthers* at last spiral. *Pericarp* two-valved, one-celled. *Seeds*, numerous.

#### 1. *C. centaureoides*, R.

Annual, erect, four-sided, first brachiate, afterwards dichotomous. *Leaflets* of the calyx keeled and acute. *Leaves* sessile, from oblong to linear, sub-tri-nerved. *Stigma* two-lobed.

*Chironia carinata*, Herb. Banks.

*Beng. Girmi.*

A native of Bengal, appears during the end of the cold, and beginning of the hot season.

*Stems* erect, four-sided, often very ramous, smooth, from three to twelve inches high; below brachiate, dichotomous, with a flower in the fork.—*Leaves* opposite, sessile; the lowermost from oval to oblong, and three-nerved, the superior linear, and half stem-clasping; all are smooth, and entire; about an inch long.—*Flowers* long-peduncled, solitary in the divisions of the branches and two- or three-fold at their terminations.—*Calyx* nearly as long as the tube of the corol, five-cleft to the base; *divisions* keeled and acute.—*Corol* and *stamens* as in the genus, the anthers becoming much twisted.—*Germ* oblong.—*Stigma* of two large, round plates, each surrounded with a thick, glandular, pubescent, horse-shoe-like margin.—*Capsules* oblong, one-celled, two-valved.—*Seeds* numerous, affixed to two longitudinal receptacles as in *Gentian*.

*Obs.* I attend to the spirally twisted anthers, otherwise I should from the structure of the capsules and two-lobed stigma have considered it a *gentiana*. The fresh plant is considerably bitter, consequently when dry much more so. In the *Banksian Herbarium* I found specimens both of this and *C. carinata* under my name.

### *ERYCIBE, Roxb.*

*Calyx* five-toothed. *Corol* one-petalled; *border* ten-parted. *Germ* superior, one-celled, from three to four-seeded, attached to the bottom of the cell. *Berry* one-seeded.

1. *E. paniculata*, Roxb. *Corom.* ii. 159.

*Erima-Tali, Rheed. Mal.* vii. 73. t. 39.

A very large, climbing shrub; a native of the mountain forests in the Circars, and the eastern border of Bengal; *young shoots* covered

with much rust-coloured farina.—*Leaves* alternate, short-petioled, reflexed, linear, oblong, pointed, entire, smooth, from four to five inches long, and about two broad.—*Panicles* terminal, large, oblong, covered with some rust-coloured farina.—*Flowers* numerous, small, rust-coloured; border yellow. The ten divisions of the border of the corol unequal and orbicular.—*Filaments* from the base of the tube of the corol, short. *Anthers* ovate, pointed.—*Germ* superior, round, smooth, one-celled, containing three, four, or five *ovula*, attached to the bottom of the cell. *Style* scarcely any.—*Stigma* large, five-grooved.—*Berry* the size of a small cherry, black, pulpy, one-seeded.

*Obs. by N. W.*

On the mountains bordering on Silhet the shrub blossoms in October and is called *Luta-Bichutti*. That which Rheede has described and figured seems to be somewhat different in having long racemes. It has been called *Erimatalia Rheedi*, in Syst. Veg. v. XXVII. et 331; Lamarck mentions it as a doubtful plant, under *Erima-Tali*, Encycl. bot. ii. 348.—N. W.

### EMBELIA. Juss.

*Calyx* five-parted. *Corol* five-petalled, on which the stamina are inserted. *Germ* superior, one-seeded, attachment inferior. *Drupe* one-seeded. *Embryo* transversely serpentine and furnished with a perisperm.

1. *E. Ribes*, Burm. Ind. 62. t. 23.

Shrubby, scandent. *Leaves* alternate, petioled, oblong, entire, smooth. *Panicles* terminal, hoary.

*Ribesioides*, Linn. fl. zeyl. N. 403.

Barbung, the vernacular name in the Silhet district.

An immense climber, a native of the forests on the east border of Bengal, where it blossoms in February and March; and the seeds ripen toward the close of the rainy season.



*Trunk* when full grown about two feet in circumference, covered with scabrous, light brown bark. *Branches* and *branchlets* very numerous, and of great extent, the tender shoots hoary.—*Leaves* alternate, petioled, oblong and elliptic, obtuse, finely veined, smooth; from two to three inches long, and one or one and half broad.—*Petioles* one-fifth or one-sixth the length of the leaves, margins somewhat winged.—*Stipules* none.—*Panicles* terminal, large, open, and hoary.—*Bractes* ensiform, villous, one-flowered.—*Flowers* numerous, very small, hoary, of a greenish yellow colour.—*Calyx* five-parted, clothed with short, white hairs.—*Petals* five, oblong, concave, spreading, hoary with short, soft, white hairs.—*Filaments* five, very short, and inserted into the middle of the petals. *Anthers* sub-sagittate, resting on the exterior half of the petals. *Germ* round, one-celled, containing a single *ovulum* attached to the bottom of the cell. *Style* short. *Stigma* headed, sub-truncate.—*Drupe* the size of a grain of black-pepper, round, crowned with a small point, smooth, succulent, when ripe black, when dry wrinkled, and very much like that spice, one-celled. *Nut* brittle, rugose, one-celled.—*Seed* solitary, roundish, with a cavity at the base. *Integuments* two.—*Perisperm* conform to the seed.—*Embryo* curved transversely, with the convexity up. *Cotyledons* two, minute, oval, lodged on one side of the base of the perisperm. *Radicle* filiform, of a curved, serpentine form, with its apex near the margin of the perisperm considerably above its base, on the side opposite to where the cotyledons are lodged, nearly as in Gaertner's *Anguillaria*, and in *Ardisia*.

The natives of the hills in the vicinity of Silhet, where the plants grow abundantly, gather the little drupes, and when dry sell them to the small traders in black-pepper, who fraudulently mix them with that spice, which they so resemble as to render it almost impossible to distinguish them by sight, and they are somewhat spicy withal.

*Obs. by N. W.*

Some confusion exists among authors respecting Burman's plant,

which it is highly probable is the same as that just described. — *Salvadora persica* (see vol. i. of this work, p. 404.) though approaching to it in general appearance, differs widely in the structure of the seed, which has been described and delineated by the younger Gaertner, Carp. iii. 228, t. 222. Poiret (Encycl. bot. vi. 196.) quotes it as a synonym together with *Antidesma Ghasambilla* Gaert. Carp. i. 189, t. 39, under *Embelia indica*, which is the same as *E. Ribes* mentioned by Lamarck in the preceding part of that work, vol. ii. 354.—I have had abundance of specimens of it from Silhet. The leaves as well as the flowers are marked with copious, minute, glandular dots, as is the case with all the other species; the margin of the petiol is not so crispate as in *E. canescens*.

I have met with a slight variety of this shrub on the island of Pinang and Singapore (on Palmer's hill), in flower and fruit from August to October; its leaves are smaller, more lanceolate, rather narrower, terminated by a long, linear, bluntish acumen; in other respects it agrees so well with the Silhet plant, that I cannot venture to separate them, especially as there are not a few examples of a singular coincidence of the Malayan flora with that of the eastern parts of Bengal, such as *Clerodendron nutans*, Wall., *Bignonia multijuga*, Wall., *Xanthophyllum flavescens*, Roxb. and others.

*Embelia* differs from *Ardisia* only in its valvate æstivation; and from *Myrsine* in having hermaphrodite flowers. I may remark here that a *marginally* imbricate æstivation is often extremely difficult and only by analogy to be discerned from a valvate one.—Perhaps all the three genera, with *Othera* and *Orira* of Thunberg, and several others ought to be united, as has been suggested by Mr. Brown, in his remarks on *Myrsine* and the family to which it belongs, in the matchless prodromus nov. holl. i. 532 et seqv.—N. W.

## 2. *E. robusta*, R.

Arboreous. Leaves from oblong to oval, smooth. Racemes axillary, and terminal, solitary.

Found by Mr. Roxburgh on the Rajmahul hills; from thence he sent the seeds to this garden, where in six years the plants produced from them were about ten feet high, with an erect stem, many nearly erect, and spreading branches, covered with smooth, ash-coloured bark. The young shoots are somewhat angular and downy.

*Leaves* alternate, short-petioled, oval, smooth, entire, from two to three inches long, one and half or two broad.—*Racemes* axillary, solitary, simple, much shorter than the leaves.—*Bractes* solitary, subulate, one-flowered.—*Flowers* small, short-pedicelled, greenish-white, rather inconspicuous.—*Calyx* five-leaved, or deeply five-cleft, ovate, villous.—*Corol* five-petalled, ovate, first spreading, afterwards revolute; thrice the length of the calyx, villous.—*Filaments* five, short; inserted on the petals. *Anthers* cordate.—*Germ* superior, ovate, one-celled, containing one *ovulum*, attached to the bottom of the cell. *Style* short. *Stigma* rather enlarged, but simple.—*Berry* dry, spherical, size of a grain of pepper, one-celled, one-seeded.—*Seed*, *perisperm* and *embryo* as in the former species, viz. copious *perisperm*, with transverse, serpentine *embryo*, as in Gaertner's *Anguillaria*, i. 372. t. 77.

#### *Obs. by N. W.*

The above shrub has become very large and rambling. All the young branches as well as the under surface of the leaves are pubescent; the tender parts densely clothed with rust-coloured, jointed and glandular tomentum. The *leaves* and *flowers* are beset with resinous dots, which are elevated on the latter.—N. W.

#### 3. *E. vestita*, Roxb.

Shrubby, scandent, very ramous. *Leaves* oblong-lanceolate, attenuate, sub-serrulate. *Racemes* axillary.

*Oaour Baberung*, the vernacular name in Silhet, where it is indigenous in the forests, climbing over trees and shrubs for support. It is uncommonly well furnished with branchlets and foliage. The

flowers are particularly small and delicate, collected in little oblong, sub-sessile, axillary racemes. They appear in January.

*Obs. by N. W.*

I have only seen the fruit of this species which was communicated by the late Mr. Smith from Silhet.—*Berries* very numerous, approximate, globular, pedicelled, forming short cylindric racemes; smooth, red, as large as a pepper-corn, slightly retuse at both ends, pointed with the persistent style. *Integument* double; *exterior* (*arillus*) crustaceous, elegantly striated with converging longitudinal lines, shining within. *Interior* ferruginous, lamellated, entering the pits of the *perisperm* which is horny, round. The rest as in the first species.—N. W.

*Additional species by N. W.*

4. *E. villosa, Wall.*

Rambling to a great extent. *Branches* with numerous callous dots; villous. *Leaves* oval or roundish-oval, with a short acumen; base acute; villous underneath. *Racemes* simple, axillary, fascicled, long and slender, villous.

This species was introduced into the botanic garden together with *E. robusta, R.* by the late Mr. W. Roxburgh from Rajmahul. It blossoms during the hot season.

A large, rambling, and climbing, spreading, ramous shrub. *Branches* round, long, somewhat zig-zag, villous, marked with innumerable callous, round dots; the upper ends, as well as all the young parts, densely covered with ferruginous tomentum.—*Leaves* scattered, from oval to sub-rotund-oval, apex roundish with a short, broad acumen, base tapering, acute, perfectly entire, ciliate, slightly waved and uneven, from four, to five inches long, dark-green, smooth above, except along the primary vessels; soft, villous, somewhat hoary underneath, minutely dotted, the rib and the sub-opposite, parallel;

very oblique nerves elevated, veins reticulate, especially near the margin, where they form arched anastomoses.—*Petiol* round, slender, villous, half an inch long, only furrowed near the base of the leaf.—*Racemes* long, slender, cylindric, axillary, mostly two or three fascicled, sometimes solitary, short-peduncled, clothed with copious, soft, articulate, short hairs, spreading, from four to six inches long.—*Flowers* small, whitish, very numerous, on short pedicels, supported by capillary, villous *bractes*; *calyx*, *corolla* and even the *filaments* with resinous dots; petals pubescent; in other respects precisely as in the next species.

*Obs.* It comes near to *E. robusta*, but differs in its hairiness and the long, slender, fascicled racemes.—N. W.

#### 5. *E. nutans*, Wall.

Shrubby, nodding, at length pendulous, with very dense, slender *branches*. *Leaves* sub-bifarious, approximate, lanceolate, acuminate, smooth and shining, waved. *Racemes* numerous, short, two or three together in axillary fascicles.

Introduced into the botanic garden at Calcutta from Silhet, in 1813, by the late Mr. Smith. It blossoms in the cold season from the beginning of December to the middle of January. Its fruit has not yet been produced here.

A shrub, from three to five feet high, very thickly branched, nodding. *Branches* very long, slender, and flexible, the uppermost together with the apex of the stem pendulous; round, covered with grey, dotted bark; while young covered with soft, rust-coloured pubescence.—*Leaves* alternate, sub-bifarious, very numerous and approximate, many times longer than their interstices, somewhat pendulous, coriaceous, lanceolate, most entire, acuminate, waved, slightly plicate, smooth, of a bright green colour, shining above, pale and minutely dotted underneath, with a pallid, pubescent, or smooth rib and sub-transverse, parallel, capillary nerves, which unite in sub-marginal, reticulate arches.—*Petiols* very short, pubescent, sulcate.

--*Racemes* small, axillary, four times shorter than the leaves, solitary or two or three-fascicled, erect, on very short, round, peduncles, which as well as the short pedicels are beset with ferruginous pubescence. A small withering linear *bractlet* under each pedicel, half the length of it. *Flower* small, white, verging to greenish, possessing a very disagreeable smell.—*Calyx* flattish, spreading, pubescent, divided into five ovate, acute segments.—*Corolla* twice as long as the calyx; petals alternating with the former, lanceolate, acute, obscurely villous within; æstivation valvate. *Stamina* equalling the corolla in length; *filaments* subulate, inserted and partly received into the base of the opposite petals: *anthers* ovate, with longitudinal cells. — *Ovary* very small. *Style* cylindric, short. *Stigma* simple.

*Obs.* This is a very elegant shrub, its dense branches and leaves and nodding or pendulous habit rendering it a desirable ornament in borders and shrubberies.—N. W.

#### 6. *E. floribunda*, Wall.

Scandent, smooth, with extremely slender branches. *Leaves* oblong-lanceolate, finely acuminate, with straight margins. *Panicles* axillary, of many, long, slender *racemes*.

I have found it abundantly in Nipal, on Chundra-giri, Sheopore, and at Thankote, also in more northerly situations. It flowers from December to February and is in fruit from March to May.

A most extensive, beautiful climber, rambling over large trees. *Bark* pallid, scabrous, from a great number of ash-grey, elevated dots. *Branches* extremely long, slender, flaccid and pendulous.—*Leaves* alternate; oblong-lanceolate, from five to six inches long, finely acuminate, rounded, and frequently somewhat unequal at the base, with most entire, straight, sub-revolute margins; coriaceous, smooth, dotted with numerous semi-pellucid points, especially near the circumference, where they form a marginal row; dark-green and shining above, pale underneath, with elevated rib and capillary, sub-opposite, almost inconspicuous nerves.—*Petiols* about one-third of

an inch long, with a deep, sharp-margined furrow.—*Stipules* none.—*Panicles* axillary, solitary, very numerous along the younger branches; ovate, acute, short-peduncled, consisting of many cylindric, slender, scattered, sub-sessile, spreading *racemes*, three or four inches long, of dense, fragrant, small, yellowish green *flowers*.—*Peduncles* slender, round, a little pubescent.—*Bractes* under the ramifications, and small, linear, membranous pedicels, marked with brown-glandular dots, disposed in small lines.—*Pedicels* three lines long.—*Calyx* very small, persistent, divided into five, lanceolate, spreading, dotted, membrane-margined segments. *Petals* three times the size of the calyx, alternating with its segments, lanceolate, very spreading, sub-recurved, slightly pubescent, ciliate, with capitate minute glands; æstivation valvate.—*Stamens* opposite to the petals, equalling them in length and inserted a little above their base; spreading. *Filaments* subulate; *anthers* ovate, acute, with twin cells.—*Ovary* minute, ovate, smooth.—*Style* subulate, short, persistent. *Stigma* simple.—*Berry* round-obovate, cuspidate, acute, with the persistent style supported by the calyx, divaricate or reflexed, red, smooth, scarcely larger than a coriander seed.—*Flesh* thin, succulent.—*Seed* globular, elegantly marked with six or seven large pits, into which the brown lamellated, membranous integument enters.—*Embryo* cylindric, transversal, long.—N. W.

7. *E. canescens*, W. Jack.

Scandent, with villous branches. *Leaves* ovate-oblong, acuminate, with retuse base, villous underneath. *Petiol* deeply furrowed, with crispate-glandular margins. *Peduncles* terminal, branchy, consisting of very long, hairy racemes. *Petals* villous on both sides.

A native of Pulo-Pinang, where it was discovered by the late Mr. Jack, in 1819.

Malay, *Assum Ootan*.

A climbing shrub, with slender, villous, sub-flexuose branches.—*Leaves* ovate-oblong, acuminate, bluntish, with gibbous, membran-

aceous, revolute margins ; base narrower, slightly retuse ; four inches long and about two broad at their outer part ; smooth above, dotted, finely reticulate underneath, with capillary, numerous nerves and the elevated villous rib.—*Petiol* short, villous, deeply furrowed, and the margins remarkably crispate, sub-glandular.—*Panicle* ample, terminal, branchy, consisting of numerous, very long and slender, hoary, spreading *racemes*. *Peduncles* filiform ; *pedicels* capillary, fascicled, or solitary, four lines long, supported by a minute *bracte*.—*Flowers* white.—*Calyx* very small. *Petals* lanceolate, villous on both sides ; the filaments inserted above their base.—*Berry* round, apiculate, when dry blackish, rugose like a pepper-corn, which it also equals in size.

*Obs.* It approaches so closely to *E. Ribes* as to make it doubtful whether or not they ought to be separated. On attending, however, to the following points I think they may be discriminated. In that species the leaves are smaller, lanceolate, acute at the base, quite smooth, the petiols less crispated ; in ours the leaves are larger, ovate, with a retuse base, and villous under surface ; the panicles are likewise much larger and more hoary, and the racemes longer in our plant.—N. W

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*Additional genera by N. W.*

**MYRSINE.** *Linn.*

Polygamous. *Corolla* four- seldom five-cleft. *Anthers* almost sessile. *Ovarium* four or five-seeded. *Stigma* mostly lobate or laciniate. *Drupe* round, with a crustaceous, one-seeded shell.—Brown. *prodr. nov. holl. i.* 533.

1. *M. semiserrata*, *Wall.*

Arboreous, erect. *Leaves* sharply serrulate from the middle to



the apex. *Flowers* peduncled, fascicled. *Style* short. *Stigma* dimidiate, unilateral, laciniate and fringed.

Parb. and Newar, *Bilsee* and *Beresee*; also *Kalikatha*.

I have found it in most parts of Nipal which I have visited, both on the smaller hills and the highest mountains of Chundra-giri and Sheopore, where it blossoms and is in fruit during the cold season, from December to March. It is also a native of the western part of that kingdom.

A branchy tree, from thirty to forty feet high, with a trunk of about six inches in diameter, covered with pretty even, pale bark. *Branches* round, ash-coloured, with many prominent, callous dots; branchlets angular, smooth.—*Buds* terminal, conical, slender, reddish from copious resinous dots; *scales* lanceolate.—*Leaves* very close to each other, scattered, spreading, from lanceolate to linear-lanceolate, attenuate at each end, acuminate, from three to five inches long, coriaceous and firm, finely cuspidate-serrulate from the middle to the apex, sometimes from the base almost, rarely on one side only; on luxuriant shoots sometimes entire and coloured; they are smooth and shining, copiously besprinkled with reddish, resinous, pellucid dots, especially along the recurved margins, where they form a line; the under side with a prominent rib and fine oblique nerves uniting in sub-marginal, reticulate arches.—*Petiols* short, scarcely more than two lines long, dotted, flattish above.—*Stipules* none.—*Flowers* small, scentless, tetrandrous or pentandrous, hermaphrodite and male on the same or on different trees, from six to twelve together in very numerous, axillary, rounded fascicles, which are surrounded at the base by small, ovate, deciduous, brownish scales.—*Peduncles* half an inch long, slender and filiform, sub-clavate, obscurely angular, dotted; those in the centre of the fascicle sometimes abortive or deficient.—*Calyx* persistent, copiously marked with elevated, resinous dots; with five lanceolate, acute, spreading, ciliate teeth.—*Corolla* rotate, of a light pink colour, dotted, twice as large as the calyx; *laciniæ* lanceolate, recurved, alternating with the teeth.

the calyx; *tube* very short.—*Filaments* extremely short, inserted immediately under the base of, and opposite to the laciniae. *Anthers* large, ovate, erect, orange-coloured, bursting longitudinally on each side.—*Pistil* longer than the stamens, dotted. *Ovary* ovate, one-celled, from three to four-seeded; the *ovula* semi-immersed in a horizontal circular line, round a fleshy, globular, erect and free *placenta*. *Style* columnar, short. *Stigma* fleshy, with sub-infundibuliform base, and a large, dimidiate, unilateral, fimbriated, three-lobed, sub-laciniate limb.—*Male flowers* smaller than the *united* ones, with lilac anthers and a rudiment of the pistil. *Drupe* the size of a pea, red, globular, apiculate, a little depressed, supported by the unaltered, minute calyx; smooth and shining. *Flesh* soft and pulpy. *Seed* one, erect, round. *Putamen* crustaceous, smooth. *Integument* membranous. *Perisperm* conform to the seed, cartilaginous, pitted and slightly ruminant externally; pearl-coloured. *Seed* cylindric, long, slightly curved, very nearly horizontal, almost equalling the perisperm in length, its extremities reaching almost to the surface. *Cotyledons* semi-cylindric, blunt, their inside flat; *radicula* obtuse.

*Obs.* The wood of this species is of a Chocolate-colour, radiated, compact and heavy; it is much esteemed by the hill people for various carpenters works. They eat the ripe fruit.—N. W.

## 2. *M. capitellata*, Wall.

Arboreous, erect. *Leaves* oblong-lanceolate, most entire, leathery. *Flowers* sessile in axillary heads. *Style* long and thick. *Stigma* blunt, smooth, entire.

This I have found as common as the preceding and inhabiting the same places. Time of flowering the same.

Parb. *Syade*.

Newar. *Bhooee Billoo*.

A tree, resembling the preceding in stature and general appearance. *Branchlets* thick and angular. *Leaves* scattered, approximate, spreading, tough and leathery, from oblong-lanceolate to

oval; acuminate; acute at the base; entire and without any tendency to serratures; from five to seven inches long; copiously dotted near the sharp margin; shining above, pale and slightly glaucous underneath, with an elevated rib, and capillary, almost invisible nerves; on very short, thick, channelled, sometimes pink-coloured *petiols*. *Flowers* polygamous, sessile, crowded in numerous small, rounded heads in the axils and vestiges of the fallen leaves, in which latter case they appear to be lateral; greenish, with copious minute, elevated, resinous, brown dots, supported by small, ovate, concave, permanent, coriaceous *bractes*; these heads are sessile or elevated on very short, thick, woody peduncles, scabrous with the permanent bractes.—*Æstivation* valvate.—*Calyx* urceolate, with five ovate, acute teeth. *Corolla* twice the size of the calyx, with lanceolate, recurved segments, and short tube.—*Filaments* short, subulate. *Anthers* erect, oblong. *Ovary* roundish, the internal structure as in the preceding species. *Style* thick and fleshy, twice as long as the corolla, rather larger in the middle, a little curved towards the apex; the base sub-immersed in the slightly depressed ovary. *Stigma* blunt, or obscurely two-lobed. The *male flowers* rather larger. *Drupe* as in the preceding species but smaller.

*Obs.* The wood of this tree is hard and durable like that of *M. semiserrata*, and is used for similar purposes. The fruit is also eaten.—N. W.

### 3. *M. bifaria*, Wall.

Arboreous, or shrubby, erect, with villous *branchlets* and *petiols*. *Leaves* small, lanceolate, cuspidato-serrulate, and cuneate, entire at the base. *Flowers* sub-sessile, fascicled, tetrandrous.

Common in Nipal, from Hetounra to the valley, and on the surrounding mountains; time of blossoming and fruiting the same as the preceding. I have also had it from Koomaon and Shreenagur.

A small tree, about twenty feet high, irregularly divided from the bottom so as to have scarcely any definite stem, *Branches* round,

smooth, with grey dotted bark; while young slightly villous with short, jointed, ferruginous or reddish, copious hairs.—*Leaves* small, alternate, approximate, bifarious, spreading, coriaceous, lanceolate, or cuneate-lanceolate, acute, sharply serrulate, each serrature ending in a sharp point, tapering and sub-entire at the base, very smooth; and minutely dotted as in the preceding species; lucid and slightly concave above, pallid or whitish underneath with scarcely visible reticulate nerves; from half an inch to an inch and half long.—*Petiol* scarcely a line long, a little villous, slightly channelled.—*Flowers* united and male, tetrandrous, white, with a pale pink tint, five, or six fascicled in axillary, numerous, round, small bunches, besprinkled with copious brown, elevated, resinous dots. *Peduncles* fleshy, very short, each with an ovate, concave, dotted, deciduous bractlet at the base. *Calyx* and *corolla* with lanceolate, ciliate divisions. *Filaments* very short, subulate, widening and almost uniting at their base. *Anthers* large, oblong, erect, purple, nearly twice as long as the corolla. *Style* short. *Stigma* large, flat, verrucose.—*Rudiment* of the pistil in the male flowers with a minute point. *Drupe* round, red, smooth, about the size of a coriander seed.

*Obs.* The tree comes very near to *M. africana*. The berries are much infested with a parasitical fungus, consisting of numerous spreading, rigid, black, columnar, capitate bodies, which stain the fingers with black dust.—N. W.

#### 4. *M. pachysandra*, Wall.

Arboreous, erect. *Leaves* smooth, oblong-lanceolate, acuminate, entire. *Flowers* hermaphrodite, pedicelled, glandular, forming numerous axillary and lateral fascicles (from the vestiges of the fallen leaves.) *Anthers* large.

A small tree found growing on the hills at Pinang by Mr. George Porter; in blossom in the beginning of the year.

*Branches* cylindric with elevated decurrent lines; villous; while

young densely so, and ferruginous.—*Leaves* lanceolate, elongated, scattered, very close to each other, short-petioled, tapering, acuminate; base acute; leathery, entire, smooth, shining above; with many, parallel, oblique, fine nerves underneath, which unite in arches close to the margin; rib slender, prominent, appearing to be keeled above when dry; veins invisible; when held to the light they appear besprinkled with copious, minute, brown, round or linear, transparent dots; from four to seven inches long; pubescent while young.—*Petiol* as long as a nail, convex, with a flattish furrow above.—*Flowers* white, small, slightly villous, copiously marked on all the internal as well as external parts with brown elevated round or linear, largish dots; pedicelled, collected in dense, axillary, round, sub-sessile *fascicles*, or from the vestiges of the fallen leaves; in the latter case they occupy and almost cover the branches for a good length under the leaves.—*Pedicels* round, villous, four lines long, supported by very minute *bractes*. *Calyx* spreading, villous, with lanceolate, acute, ciliate teeth.—*Corolla* rotate, smooth, dotted, three times the size of the calyx; before expansion spirally imbricate and conical; *laciniæ* ovate, acute, spreading, their base pubescent; *tube* very short.—*Filaments* five, very short, opposite the laciniæ, a little pubescent at their broad bases, which unite in a narrow margin. *Sterile* ones none. *Anthers* erect, large and thick, ovate, acute, cuspidate, sub-triangular, uniting into a conical five-cornered tube round the style, at length free, the back fleshy with many elevated large dots; cells marginal, longitudinal. *Ovary* globular, sessile, without any surrounding disc, one-celled; *ovula* five or more, flattish, round, irregularly scattered and sub-immersed, on a globular, fleshy, erect placenta. *Style* filiform, a little longer than the stamina. *Stigma* simple.—I have only seen one unripe, imperfect fruit, which was oblong, dotted with glands, six lines long, supported by the unaltered calyx, on a lengthened divaricate peduncle; one-celled.

*Obs.* This tree is exceedingly like a *Bumelia*, Gaert. fil. Carp.

iii. 126. t. 202. and it approaches closely to *Sideroxylon* and *Chrysophyllum*.—The structures of the flowers, their glandular nature, and above all the anatomy of the ovary prove it to belong to the family of *Myrsinæ*, and probably to the genus under which I have placed it.—N. W.

5. *M. ? undulata, Wall.*

Shrubby, climbing, smooth. *Leaves* lanceolate, membranous, with entire, undulate margins. *Racemes* lateral in the axils of the fallen leaves. *Flowers* tetrandrous, four-petalled. *Stamina* shorter than the corolla.

This is rather an uncommon shrub in Nipal where I have only found it on Sheopore, blossoming in May.

A large climbing, smooth, branchy shrub. *Bark* ash-coloured, somewhat spongy, with numerous, callous dots. *Branche*s slender, round; the old ones sub-pendulous, the young shoots ascending; with terminal, small, subulate *buds*.—*Leaves* alternate, membranous, smooth, lanceolate, acuminate; base acute; margins slightly waved, entire, rib brownish, nerves and veins capillary, reticulate; besprinkled with scattered diaphanous minute lines or dots; the upper side shining; from three to four inches long; taste slightly acidulous.—*Petiols* very short, furrowed, slightly membrane-margined, jointed at the base. *Stipules* none.—*Racemes* scarcely an inch long, subsessile, lateral from the axils of the fallen leaves, spreading, numerous.—*Peduncle* thickish, cylindric, pubescent.—*Pedicels* scattered; spreading, pubescent, three or four lines long, jointed at the base and supported by a small lanceolate *bracte*.—*Flowers* small, scentless, yellowish, white, dotted. *Calyx* ovate, smooth, four-cleft; *laciniæ* ovate, obtuse.—*Corolla* four times as long as the calyx, spreading, four-petalled; *petals* lanceolate, acute, thickish, a little concave above, scabrous, somewhat gland-ciliate; during æstivation two are exterior, and two interior. *Stamina* four, spreading, a little shorter than the petals, inserted above the base of them, and from thence decur-

rent; *filaments* subulate, fleshy, marked on the inside with a longitudinal furrow. *Anthers* erect, rather large, bilocular, with cordate base. *Ovarium* conical, acute, without any surrounding disc; one-celled; *ovula* two, opposite, sub-immersed, on an erect, globular, fleshy *placenta*, placed a little above its middle. *Style* thick, short. *Stigma* orbiculate sub-infundibuliform, rugose.

*Obs.* The imbricate æstivation and hermaphrodite four-petalled flowers have induced me rather to bring it under the polymorphous genus *Myrsine* than under *Embelia*.—N. W.

#### 6. *M. aurantiaca*, Wall.

Shrubby, climbing, smooth. *Leaves* thick and leathery, ovate-lanceolate, entire. *Racemes* axillary, tetrandrous, four-petalled; *filaments* very long.

A single male shrub was produced in 1803 in the botanic garden from seeds sent by the late Dr. Heyne from the Peninsula. It blossomed for the first time in March 1815, and has continued ever since producing male flowers annually.

A large rambling branchy shrub, climbing over a considerable tree, with a stem about two inches and a half thick, covered with grey, pretty smooth bark; *branches* slender, round, long, pendulous, smooth, grey; when young they are rigid, sometimes quite leafless, refracted, forming a sort of inoffensive spines on the stem and larger branches.—*Leaves* scattered irregularly, sub-bifarious, somewhat pendulous, lanceolate or ovate-lanceolate, acute at both ends, dark green; lucid above, opaque underneath, with an elevated rib; destitute of nerves and veins; with sharp, sub-membranous, slightly recurved margins; perfectly smooth, tough, leathery, dotted when viewed under the lens, from three to five inches long.—*Petiols* slender, round, somewhat twisted, sharply but not deeply channelled, an inch long.—*Flowers* inodorous, orange-coloured, forming small, oblong, obtuse, sessile, axillary *racemes*, equalling the petiols in length. *Rachis* angular, slender; the small lanceolate, concave, persistent bractlets, very short pedicels and calyces are beset with minute, glandular dots.—*Calyx* very

small, deeply divided into four acute, gland-ciliate segments.—*Corolla* four-petalled, much larger than the calyx; *petals* linear-oblong, obtuse, recurved, about two lines long, yellowish and smooth without, covered within with dense, short, glandular, orange-coloured villosity; ciliate.—*Filaments* four, divaricate, filiform, smooth, opposite to the petals, and with them inserted round the rudiment; twice their length. *Anthers* lanceolate, smallish, incumbent, longitudinally two-celled.—*Rudiment* of the pistil short, conical.—*Fruit* not seen.

*Obs.* This too is a doubtful species. It bears a great likeness to *Samara*, which Mr. Brown considers as belonging to *Myrsine*, though the fruit of that genus seems to differ widely. Except in the alternate leaves it is much like *S. laeta*, Linn. (*Cornus zeylanica sylvestris altera*, *Korakaha dicta*, Burm. zeyl. 76. t. 31.)—N. W.

### LEUCOPOGON, R. Brown.

*Calyx* with two bracts. *Corolla* infundibuliform, with bearded, spreading limb. *Filaments* enclosed. *Ovary* from two to five-celled. *Drupe* baccate or dry, sometimes crustaceous.—*Prodr. fl. nov. holl. i.* 541.

1. *L. malayanus*, W. Jack in *Mal. Misc. i.*

*Spikes* axillary, many-flowered, erect, short. *Drupe*s globular, five-celled. *Leaves* lanceolate, mucronate, nearly veinless, glaucous beneath.

Malay, *Mentada*.

Found abundantly at Singapore.

A small branchy shrub, with hard dry leaves, exhibiting the peculiar habit of this family.—*Leaves* alternate, sessile, lanceolate, acute, mucronate, very entire, very smooth, shining and convex above, somewhat glaucous below and when examined by the microscope, appearing to be covered with numerous very minute white dots, firm, with scarcely perceptible longitudinal nerves. *Spikes* axillary, erect,



much shorter than the leaves; *peduncles* somewhat tomentose. *Calyx* supported at the base by two oval, acute, concave bractes; five-leaved, oblong, acute; leaflets lanceolate, glaucescent, ciliate. *Corolla* infundibuliform, a little longer than the calyx, quinquefid, puberulous; *segments* lanceolate, bearded above beyond the base. *Stamina* five, short, alternate with the laciniae. *Filaments* subulate. *Anthers* subpendulous, marked on each side with a longitudinal furrow, simple and bursting longitudinally in the manner so accurately described by Mr. R. Brown, l. c. p. 535. *Pollen* globose. *Ovary* surrounded at the base by five distinct, erect, obtuse *scales*; five-celled, each cell containing a single, oblong *ovulum*. *Style* erect, villous. *Stigma* sub-globose. *Drupe* baccate, sub-globose, five-celled, cells one-seeded.

*Obs.* The discovery of this species is remarkable as forming an exception to the general geographical distribution of the *Epacrideæ*, a family almost exclusively confined to Australasia, or at least to the Southern hemisphere. Singapore, situated at the extremity of the Malay peninsula, and forming as it were the connecting link between Continental or Western India and the islands of the great Eastern Archipelago, partakes of this character in its Flora, which exhibits many remarkable points of coincidence with the Floras of both regions. I have had occasion to observe resemblances between its productions and those of the Northern frontier of Bengal on the one hand, and of the Moluccas on the other, while the present connects it with the still more distant range of new Holland.—W. Jack, l. cit.

*Obs. by N. W.*

I have met with this elegant shrub in great abundance on the small hills of the island mentioned in the preceding most accurate description, also on the adjacent islets, covered with flowers and fruit in October.—It grows to the height of three feet. The leaves when dry become very glaucous and bloomy underneath; their

point is subulate, slightly deflexed. Among a large collection of drawings in the possession of my worthy friend Lieut. Colonel. W. Farquhar, the resident at Singapore, who has spent many years in the Malay countries, doing good and promoting researches in natural history, to which he is himself zealously and successfully devoted, I found one of this very plant which he informed me he met with near the summit of mount *Ophir*, situated about thirty miles from Malacca, and elevated nearly four thousand feet above the level of the Sea.—N. W.

*EUTHEMIS*, W. Jack, in *Mal. Miscell.* i.

*Calyx* inferior, five-leaved. *Corolla* five-petalled. *Stamina* hypogynous, with oblong, acuminate *anthers* bursting at the apex with two pores. *Style* filiform, equalling the *stamina*. *Berry* five-seeded. *Seeds* disposed round the axis, oblong, angular within, enclosed in a fibrous arillus, albuminous. *Embryo* inverse, cylindrical, as long almost as the seed, with superior *radicula*.

1. *E. leucocarpa*, W. J.

*Leaves* lanceolate, beautifully spinuloso-serrate. *Racemes* branchy at the base. *Berries* globular, white.

Malay, *Pluwan bruk*.

Native of forests at Singapore.

A shrub of uncommon elegance and beauty, erect, four or five feet in height; *branchlets* round, smooth, sometimes slightly angled. *Leaves* alternate, petiolate, lanceolate, acute, decurrent on the petiol, spinuloso-serrate, very smooth and shining, beautifully striated with fine parallel, transverse nerves.—*Petioles* margined, flat and channelled above, dilated at the base into a thick, rounded, prominent rim, which half embraces the stem.—*Stipules* lanceolate, acuminate, ciliate, very deciduous.—*Racemes* erect, with one or two branches near the base, at first terminal, afterwards lateral and oppositifolius

by the shooting up of the stem from the base of the peduncle.—*Flowers* pedicellate, generally in pairs.—*Bractes* ovate, acute.—*Calyx* inferior, five-leaved, spreading; *leaflets* ovate, obtuse, ciliate, the two inner ones rather smaller.—*Corolla* white, sometimes tinged with purple, five-petaled; *petals* twice as long as the calyx, reflexed, ovate-oblong, obtuse.—*Stamina* five, inserted below the ovarium; alternating with these are sometimes found five, short, abortive filaments.—*Filaments* very short.—*Anthers* longer, erect, converging round the style, oblong, prolonged into acumina which are sometimes a little contorted, and which open at their summits by a pore; the cells are adnate below to the sides of the filament.—*Ovary* oblong, acute.—*Style* filiform, erect, equal to the stamina.—*Stigma* simple. *Berry* snow-white, globular, obscurely angled, crowned with the persistent style, which is obliquely deflexed; of a spongy or farinose substance, containing in the centre five *seeds*, which are disposed round the axis, and enclosed in arilli, composed of tough longitudinal fibres.—*Seeds* (*pyrenae*?) oblong, somewhat reniform, hard.—*Albumen* conform to the seed.—*Embryo* inverse, cylindrical, nearly as long as the seed. *Cotyledons* semi-cylindric, obtuse. *Radicle* superior, longer than the cotyledons.

The branches are terminated by long corniculate buds in which the gemmation is involute.—W. Jack, l. cit.

## 2. *E. minor*, W. J.

*Leaves* narrow-lanceolate, slightly serrulate. *Racemes* undivided. *Berry* red, angular, acuminate.

Found at Singapore along with the preceding.

This is a smaller shrub than the former, branched and smooth.—*Leaves* alternate, petiolate, linear-lanceolate, rather obtuse with a mucro, attenuated towards the petiol, slightly serrulate, very smooth, shining, finely striated with transverse veins.—*Petioles* short, thickened at the base, channelled above.—*Stipules* linear, ciliate.—*Racemes* simple, erect, at first terminal, becoming afterwards lateral.

—*Flowers* alternate, pedicellate, often in pairs. There is a single leaf-like bracte and several smaller ones at the base of the pedicels, less deciduous than in the preceding. *Calyx* five-leaved; *leaflets* ovate, ciliate. *Corolla* white, spreading, five-petalled; *petals* lanceolate, acute.—*Stamina* five, erect, conniving, hypogynous; *filaments* very short; *anthers* yellow, oblong, broader at the base, two-celled, cells adnate to the sides of the filament prolonged above into an acumen, opening at the top by a pore.—*Ovary* oblong, acute. *Style* a little longer than the stamina. *Stigma* simple. *Berry* red, five-angled, acuminate, composed of a whitish farinaceous pulp, and containing five seeds, each enveloped in a tough, fibrous arillus and in structure the same as the preceding.—*W. Jack, l. cit.*

*S. E. ? elegantissima, Wall.*

*Leaves* elliptic-lanceolate, tapering at both ends, finely acuminate, sharply and minutely serrulate, the nerves reticulate and uniting in two or more sub-marginal arches.

A native of the same place as the preceding, and of the contiguous isles.

A small shrub, with slender, round, greyish branches, smooth on all its parts.—*Leaves* alternate, spreading, much longer than their interstices, from six to nine inches long, sometimes narrow-lanceolar, coriaceous but thinner than those of the preceding two species, serrulate, the serratures very numerous, small and sharply cuspidate, greatly tapering at both extremities, finely acuminate, glossy and polished above, shining underneath, vascular on both sides, chiefly beneath, of a light green colour. The disposition of the nerves is so elegant and beautiful as to set all description which I can give at defiance, and to exceed any other instance that has come under my observation. I remember well that Dr. Roxburgh used to consider the leaves of his *Aquilaria Agallochum* in this respect unequalled, but I am satisfied he would have conceded the palm to my plant, had he had the happiness of seeing it, as I have done in its wild, or even in

the dried state. From each side of the rib, which is rather strong and prominent, issue a great number of alternating, capillary, exceedingly fine, slightly divided and reticulate nerves, which proceed in a curved and oblique, not altogether parallel direction, towards the circumference of the leaf, where they unite by means of others formed by two or more of the lowermost nerves, and several from the middle of the rib, on each side, running along the margin in parallel directions at the distance of a line or two from it, as well as from each other, some continuing to the very apex, others disappearing in the separate vessel, which lies extremely close to the margin, sending from thence a minute somewhat thickened ramification to each individual toothlet. The veins are so minute as not to be visible except under the lens, they are exceedingly approximate, parallel, reticulated, transversal with respect to the leaf, but oblique in regard to the nerves between which they proceed backward and forward.—*Petiol* from half an inch to an inch long, more or less margined, sometimes even serrulate down to the very base in consequence of the decurrent base of the leaf. *Stipules* axillary, opposite, erect, intra-axillary, from four to five lines long, caducous, leaving a permanent vestige, narrow-lanceolar, sub-laciniate and deeply divided into filiform long teeth, parallel-nerved. Fructification not seen.

*Obs.* Although I have not been so fortunate as to meet with this plant in flower yet I have little doubt that it belongs to the same genus with the preceding two species which I have found growing in forests at Singapore and the adjacent small islands near the sea-shore, in flower and fruit in September and October. *E. leucocarpa* I have likewise met with on the island of Pinang. The foliation and stipulation is the same in all three. In that shrub the nerves are exceedingly close to each other and quite parallel; the margins and curved teeth are cartilaginous; in *E. minor* the nerves are scarcely visible. The leaves in the last described species are sub-chartaceous; in the others they are rigid and coriaceous.—N. W.

## EURYCOMA, W. Jack.

*Calyx* five-parted. *Corolla* five-petalled. Ten glands alternating with the stamens. *Ovary* five-lobed; lobes one-seeded. *Stigmas* five. *Capsules* from three- to five-follicular, smooth, one-seeded. *Seed* naked.

Natural order, *Connaraceæ*.

Polygamous. *Leaves* pinnated, fastigate. *Flowers* panicled.

1. *E. longifolia*, W. Jack.

Malay, Kagu Kabol.

Found at Tappanooly and Bencoolen in Sumatra, and at Singapore.

This is a small tree, whose branches are thick, rough with the vestiges of fallen leaves and foliose at their summits. *Leaves* crowded at the extremity of the branches, two feet long, pinnated with numerous leaflets, which are oblong-lanceolate, acute, very entire, very smooth; two or three inches in length. *Panicles* axillary, very long. *Flowers* male and hermaphrodite on different plants. *Calyx* small, five-parted. *Corolla* longer than the calyx, purple, tomentose without, with glandular hairs, petals erect, with inflexed margins. *Stamina* five, erect, shorter than the petals, alternating with five pair of villous corpuscles which are large and distinct in the male flower, very small in the hermaphrodite. *Ovary* five-lobed; lobes monosporous; in the male very small and abortive. *Style* one, short, curved. *Stigmata* five, thick, recurved. *Capsules* from three to five, nearly ovate, smooth, bursting on one side, one-seeded. *Seed* naked, (without aril or caruncle) exalbuminous.

*Obs.* The corpuscles interposed between the stamina are remarkable in the male flower, being roundish, erect, yellow bodies, with somewhat the appearance of abortive anthers, in the herma-

phrodite, however they become simple scales. The genus differs from *Cnestis* in the number of the stamina, the simple style, and the smoothness of the capsules; and from *Connarus* in the number of the ovaries and stigmas, and the want of the umbilical caruncula.—*W. Jack, l. cit.*

I have gathered abundance of specimens of this tree both at Singapore, and at Pulo-Dinding near Pinang, as well as on the last mentioned island, in flower and fruit from August to November. The branches are covered with smooth, brown bark; *young shoots* as well as petioles villous, ferruginous; *leaflets* sub-opposite, sessile, scarcely an inch distant from each other, more or less oblique at the acute base, the lower margin being always narrower; underneath they are glaucous, almost veinless, with alternate, remote, sub-transverse, broadish, scarcely elevated nerves, which unite near the margin in reticulate arches, and prominent rib; they are inserted by means of a hollow joint on a sub-quadrangular rachis; the lowermost pairs and the terminal odd one smaller than the rest. The *Capsules* are scarcely an inch long, of a dark purple colour, pedicelled, sub-umbelate, resembling somewhat the fruits of an *Uvaria* in shape and appearance.—N. W.

*SABIA, Colebr. in Linn. trans. xii. 351, and 355.*

*Calyx* inferior, five-cleft. *Corolla* five-petalous. *Petals* lanceolate. *Stamina* free, opposite to the petals and calycine segments, inserted round the base of a perigynous, five-lobed disc. *Drupe* deeply two-lobed; *lobes* reniform, one-seeded, one of them sometimes abortive or wanting. *Embryo* erect, folded.

*Natural order.* Notwithstanding several anomalies it seems to belong to *Terebinthaceæ*, Juss. and not to be far removed from the order of this extensive family called *Cassuviæ* by that distinguished botanist (*Anacardeæ* of R. Brown in Tuckey's account of the expedition to

Zaire, append. p. 431.) It must not be confounded with Willdenow's *Savia*, Sp. iv. 771, which is *Croton sessiliflorum*, Sw.

1. *S. lanceolata*, Colebr. l. cit. tab. 14.

Perfectly smooth. *Leaves* oblong-lanceolate slightly bullate. *Corymbs* axillary and terminal.

*Beng.* Soobja.

A native of Silhet, from whence it was introduced into the Hon. Company's botanic garden at Calcutta in 1814, where it grows luxuriantly and blossoms in the month of May.

Having observed the plant in its growing state I am enabled to make the following additions to the description quoted above.

A branchy, extensively rambling, smooth shrub.—*Branches*, long, slender, slightly flexuose, round, brown, while young of a glaucous green colour, surrounded at the base with several persistent, ovate, brown *bud-scales*.—*Leaves* of an oblong-lanceolate form, with nearly parallel margins, tapering at both ends, generally long-acuminate, leathery, lucid and somewhat bullate above, pale and rather glaucous beneath, with numerous, elegantly reticulate veins, and approximate, sub-opposite, nearly transversal nerves, which unite at some distance from the margin by means of slender arches; rib elevated.—*Petiol* round, a little furrowed, one-third of an inch long.—*Stipules* none.—*Flowers* very fragrant.—*Petals* opposite to the segments of the small calyx and to the insertion of the stamens, and like the style and filaments marked with numerous, linear, purple dots. *Æstivation* imbricate, conical.—*Filaments* fleshy, inserted between the petals and the fleshy *disc* or *nectary*, with the five, somewhat obtuse, subulate teeth of which they alternate.—*Anthers* at first broader than long and nodding, becoming afterwards erect and oblong, bilocular, bursting with a common dorsal, longitudinal fissure.—*Ovary* round-ovate, divided into two lobes by a pretty deep vertical furrow, two-celled, two-seeded; *ovula* erect, attached to the base of the chorda pistillaris; one of them often abortive. *Style* with two opposite furrows. *Stigma* blunt.



—*Drapes* two, sometimes only one, obovate-reniform, somewhat compressed, rugose, reticulate, smooth, obtuse and gibbous at the apex, eight lines long, generally unequal in size; their inner sides parallel, emarginate; united near their insertion in the persistent calyx by the permanent base of the style, which splits in two at the base as the fruit attains its full size, the apex continuing entire for a considerable time afterwards as in *Mitrasacme*.—N. W.

2. *S. parviflora*, Wall.

Young parts slightly pubescent. *Leaves* ovate, with membranous, waved margins. *Peduncles* axillary, few-flowered. *Petals* lanceolate. *Styles* two.

A common shrub on all the mountains round the valley of Nipal; blossoming in March and April; the fruit ripening in June.

An extensive climber, resembling the former in stature and general appearance. Young branches and petioles slightly pubescent.—*Leaves* ovate, or ovate-oblong, sometimes lanceolate, especially while young, acuminate, ending in a small cuspis, base acute, margins rounded, membranous, elegantly waved; scarcely more than half the length of those of the preceding species, not exceeding three inches, but proportionally broader and the sides rounder in other respects precisely like them; while young thin and membranous, with brownish, sub-ciliate margins.—*Peduncles* axillary and terminal, loose, filiform, compressed, purplish, half as long as the leaves, or equaling them, once or twice dichotomous, from five- to seven-flowered. *Pedicels* sub-clavate, half the length of a nail, with a few, minute, scattered, ciliate *bractlets*.—*Flowers* smaller than in the last species, dark-purple, scentless.—*Calyx* deeply five-cleft, coloured; *division* lanceolate or ovate, acute or obtuse, rather unequal in size. *Petals* lanceolate, acute, scarcely two lines long, dotted, veined, two or three exterior, the rest interior, alternating with or opposite to the calycine segments.—*Filaments* very short, straight, inserted immediately opposite to the base of the petals;

somewhat unequal. *Anthers* oblong, erect; the dehiscence takes place towards their back, in consequence of which they appear as if they were posterior. *Ovarium* and *discus* as in the preceding. *Styles* two, parallel and contiguous. *Stigma* single, obtuse.—*Fruit* smaller than that of the preceding species.—N. W.

### 3. *S. campanulata*, Wall.

*Leaves* oblong, membrane-margined. *Flowers* solitary, axillary, cup-formed, with large, round, concave petals.

I have only found it on Sheopore in Nipal, blossoming in April and May.

Habit and general appearance exactly the same as those of the preceding two species. *Branches* with many callous dots, very long and ligneous.—*Leaves* approximate, oblong-lanceolate, finely acuminate, from three to four inches long, membrane-margined, ciliate, acute at the base, and sub-decurrent on the short ciliate *petioles*; when young sub-fascicled. *Buds* scattered, ovate, with lanceolate, purple-dotted *scales*.—*Peduncles* axillary, solitary, sub-clavate, an inch and half or two inches long, naked, smooth, one-flowered, dotted.—*Flowers* green, large, cup-formed, inodorous.—*Calyx* extremely small, flat, with five ovate, most spreading, obtuse, sometimes crenulate, purplish lobes.—*Petals* membranous, ovate, sub-rotund, concave, obtuse, nearly half an inch long, parallel-veined, dotted, opposite to the calycine divisions, unequal both in size and insertion, two or three being exterior; before expansion they are loosely imbricated, ventricose. *Filaments* erect, conniving, subulate, inserted between the lobes of the yellowish disc, shorter than the petals, and opposite to them. *Anthers* erect, two-celled; dehiscence posterior.—*Ovary* ovate, smooth, rising from the centre of the hypogynous disc, marked with a vertical furrow, two-celled: cells *two-seeded*! *Ovula* inserted on the chorda pistillaris, one above the other, ascending. *Style* one, furrowed on both sides. *Stigma* single.—*Drupe*s deeply two-lobed, flat, rugose, as large as a pea, the sinus very deep and nar-

row, with contiguous sides, between which is the slender style, splitting at length from the base upwards.

*Obs.* This species is very distinct on account of its large, sub-globular, ventricose, solitary flowers, and broad petals.—Like the second species it produces in most instances its flowers when the buds begin to shoot forth their young leaves and the stem is nearly naked.—N. W.

*VENANA*, Lam. *Illustr.* ii. 99. N. 365. tab. 131. et Poiret in *Encycl. Bot.* viii. 450.

*BREXIA*, Pet.-Thouars, gen. *Madagasc.* N. 69.

*Calyx* inferior, monophyllus, five-toothed. *Corolla* five-petalled, alternating with the stamina, and together with them inserted on a narrow dentate discus. *Drupe* five-cornered, many-seeded, beaked.

The affinity of this shrub is doubtful to me. It seems to be intermediate between Jussieu's *Terebinthaceæ* and *Rhamneæ*.

1. *V. madagascariensis*, Lam. *l. cit.*

*Leaves* obovate or oblong, entire; while young minutely gland-dentate.

A native of Madagascar. I met with the tree in flower in November 1812, in the Governor's garden at Reduité, at the Mauritius, from whence I brought the seeds with me to Bengal. In the Company's botanic garden at Calcutta it blossoms in the hot weather and ripens its fruits during the rainy season.

A small, sparingly ramous, slender tree, with pretty even brownish bark. *Branches* elongated, ascending, round, smooth, glaucous, as are all the other parts; *young shoots* somewhat angular, subscandent.—*Leaves* scattered, approximate, mostly ascending or bent in one direction, coriaceous, firm, obovate or cuneate-oblong, with a very blunt rounded end, entire, tapering downwards, from three to five inches long; those of the young shoots are oblong, with parallel margins, measuring often a span in length; glaucous and opaque on

both sides, perfectly smooth, very pallid underneath, with elevated, keeled rib, and alternate obscure nerves; veins almost imperceptible, margins slightly recurved.—*Petiol* round, recurved, slightly furrowed, with a scarcely swelled, jointed base.—*Stipules* none.—*Umbel* solitary, lateral, or terminal, nodding, half the length of the leaves, rounded, obscurely bifid, on a compressed, broadish, flaccid *peduncle*, which is three times as long as the petiol, somewhat two-lobed, and thickened at the apex.—*Flowers* large, coriaceous, pale green, inodorous, on clavate, rounded *pedicels*, which are half an inch long, with a number of ovate, fleshy scales surrounding their base.—*Calyx* cup-shaped, flattish, short, adpressed to the bottom of the corolla, persistent, with five ovate, acute teeth.—*Corolla* campanulate, with a wide, five-angled tube and spreading limb; about half an inch long.—*Æstivation* imbricate. *Petals* very thick and leathery, broad-oblong, with parallel, sharp, alternately imbricating margins, apex rounded, sub-acute, the inside convex towards the middle; base thickened, sub-retuse, inserted on the outside of the nectary.—*Filaments* five, fleshy, thick, subulate, ascending, a little curved, alternating with the petals; *anthers* oblong, large, erect, slightly conniving, bilocular, bursting along the margins, inserted at their basis. *Disc* or *nectary* fleshy, narrow, green, persistent, surrounding the base of the ovary, having five marks on the convex outside for the insertion of the petals; margins fringed with numerous subulate, short, erect, unequal teeth, among which the filaments are inserted. *Ovarium* above, large, ovate, five-angled, five-celled, with numerous subulate, transversal ovula, attached to the axis in two series; it tapers into a very short thick *style*. *Stigma* five-lobed, elevated to the base of the anthers; lobes ovate, acute, erect.—*Drupe* oblong, rounded, with five slender, elevated ribs, hence five-cornered, about two inches long, of an ash-grey colour, marked with numerous small, scarcely elevated papillæ, like the surface of an orange, surrounded at the base by the withered vestiges of the calyx and disc, ending rather abruptly in a sub-conical, five-cornered, blunt apex, which is about

two-thirds of an inch long; five-celled; *cells* smooth and polished within. *Putamen* hard, bony, two lines thick. *Seeds* numerous, horizontal, smooth and shining brown, ovate, slightly angular, about the size of those of a raisin, their apex inserted by a very short funicle to the inner angle of each cell. *Integuments* two; the inner one pale membranous. *Embryo* ovate, amygdaline; *cotyledons* ovate, obtuse; *radicle* cylindric, centripetal.

*Obs.* The margins of the tender, brownish leaves are marked with remote, glandular, minute, globular toothlets, which are easily rubbed off, leaving no vestige whatever on the cartilaginous margin. It is only in this state that the leaves appear denticulate, with both surfaces lucid and varnished as it were and slightly gland-dotted. As they grow old all these appearances vanish entirely, and they become perfectly entire, smooth and glaucous.

It has been remarked by Poiret in *Encycl. Bot. Supl. i.* 698 that Lamarck's *Venana* is the same genus with *Brexia* of Petit-Thouars; but that they belong to two distinct species. I have no doubt of our evergreen tree being the very same as Lamarck's plant; the only difficulty of the sessile flowers, which he attributes to it, is removed by considering that he calls the inflorescence at one place a *raceme*, and at another a *head*; while the flowers in his very indifferent figure are represented as being pedicelled.—P. Thouars's plant differs in having the young leaves spinous, and the old ones dentate.—N. W.

### SYNDESMIS, Walt.

*Calyx* spathaceous, split on one side, inferior. *Petals* four or five, uniting at their base with the filaments and forming a column on which rests the oblique ovary. *Style* lateral.

In the *artificial system* this new genus belongs to *Tetrandria* or *Pentandria monogynia*, the section with inferior four- or five-petalled flowers.

Its place in the natural arrangement is doubtful.

1. *S. elegans*, Wall.

Found by Mr. Porter, on hills at Pinang in flower in the beginning of the year.

A small elegant tree. *Branches* irregularly and much sub-divided, very slightly angular, knobbed at the insertion of the petioles, with ash-coloured bark, perfectly smooth, as are all the other parts.—*Leaves* scattered, approximate towards the top of the branches; lanceolate, obtusely acuminate, tapering at both ends; leathery, shining, reticulate underneath with an elevated rib, and numerous sub-opposite, parallel nerves; from three to five inches long.—*Petiol* rather slender, round, nearly an inch long, slightly channelled, the base a little enlarged, inserted on a corresponding protuberance of the branch.—*Stipules* none.—*Corymbs* terminal; spreading; round-ovate, obtuse, smaller than the terminal leaves, with alternate, sub-simple, coloured branches, each bearing from five to nine racemose flowers. *Pedicels* capillary, two or three lines long, each supported by a linear, caducous bracte.—*Calyx* spathaceous, membranous, scarlet-red, oblong, cylindric, about six lines long, with four dark-coloured capillary, parallel nerves; split on one side towards the apex, which is obtusely bidentate, the teeth short, pubescent.—*Corolla* white, membranous, four or five-petalled, twice as long as the calyx; *petals* linear-lanceolate, bluntish, spreading, slightly pubescent above, the inside of their base uniting with that of the filaments and forming a columnar, fleshy peduncle, on which rests the pistil, rising from the bottom of the calyx and almost equalling it in length, somewhat angular on account of the free, decurrent, narrow margins of the petals.—*Estivation* imbricate.—*Stamina* four or five, as long as the corolla, spreading; *filaments* slender, cuspidate, uniting at the base under the ovary; *anthers* erect, oblong, with bifid base and longitudinal cells.—*Ovary* resting on the apex of the pedicel formed by the petals and filaments, globular, somewhat flattened, apiculate on one side for the insertion of the style, hence oblique, one-celled, one-seeded: *ovulum* erect. *Style* filiform, lateral, ascending, at first spiral at the base, afterwards more straight, rather longer than the stamina. *Stigma* acute, simple.

*Obs.* Mr. Porter informs me that this is a great beauty when in blossom, as I can easily imagine it to be, judging from the dried specimens only.—The natural affinity of this genus I am unable to determine, especially as I have not seen the fruit; it seems however not far remote from the order of *Terebinthaceæ*, and the division which Mr. Brown calls *Connaraceæ*.—If the monophyllous calyx be considered as a spathaceous bracte an affinity may be established with *Jonesia* and *Macrolobium*, which genera the late Mr. Jack has justly pronounced to be allied under the same natural family, in Malayan miscell. ii.—N. W.

*GENIOSTOMA*, Forst. charact. 22. t. 12.

*Calyx* inferior, flattish, five-toothed. *Corolla* funnel-shaped, with a bearded throat, and five-cleft border. *Stigma* two-lobed. *Capsule* two-valved, two-celled, many-seeded.

1. *G. acuminatum*, Wall.

*Leaves* oblong-lanceolate, finely acuminate, hairy underneath, as are also the rambling, slender *branches*. *Stipules* lanceolate, long, distinct. *Umbels* axillary, crowded, hairy, shorter than the petiols.

A native of Pulo Pinang, from whence Mr. Porter sent me specimens in flower, gathered on the hills in the beginning of the year.

Shrubby; with long, slender, sub-scandent, obscurely four-sided *branches*, clothed while young with much adpressed short hairiness; older ones scabrous, grey.—*Leaves* opposite, remote, spreading, oblong-lanceolate, perfectly entire, tapering into a long, slender acumens, base acute, from three to six inches long, coriaceous; smooth and shining above; underneath with short adpressed hairs, especially along the ramifications of the vessels, while young silky; rib very slender, elevated, as are also the oblique, sub-opposite, parallel nerves, which continue almost imperceptibly along the margins; veins capillary, sub-transversal.—*Petiols* slender, round, obscurely furrowed,

hairy, about an inch long.—*Stipules* perfectly distinct to the very base, opposite between the petiols, and equalling them in length, deciduous, leaving a ciliate vestige, lanceolate, erect, adpressed, tapering from the broad base to a fine point, hairy on both sides, especially within near their insertion, where they are densely bearded with long hairs, interspered with a number of brown, glandular, subulate, short bodies, which continue in an adpressed series on the branch after the stipules have fallen off.—*Flowers* small, white, on capillary pedicels, disposed in small, fascicled and crowded, axillary, rounded, opposite, short-peduncled, hairy umbels, scarcely half the length of the petiol. *Bractes* very small, lanceolate.—*Calyx* urceolate, flattish, hairy without, with five, broad, acute, triangular teeth.—*Corolla* infundibuliform, short, smooth on the outside, valvate during æstivation; tube obscurely five-cornered, densely bearded within; *limb* spreading, divided into five lanceolate, acute *laciniæ*, equalling the tube in length; throat wide, bearded with abundance of hairs rising from the inside of the tube.—*Stamina* five, smooth, erect, almost concealed among the hairs of the tube; filaments short, inserted under the fissures which separate the laciniæ; *anthers* ovate, two-celled, inserted on their back, a little elevated above the throat.—*Ovary* above, minute, crowned with a soft fleshy, smooth, flat disc; its internal structure I have not been able to make out satisfactorily; I conjecture however, that it is two-celled, with two erect ovula. *Style* short, columnar, perforating the disc, and scarcely longer than it. *Stigma* fleshy, convex, sub-capitate, two-lobed: the lobes slightly sulcate.

*Obs.* I have on a former occasion, in describing my new genus *Gardnera* (vol. i. p. 400. et seqv.) had an opportunity of adverting to a family, intermediate between *Rubiaceæ* and *Apocynææ*, which has been pointed out by Mr. Brown and which I suggest may be called *Gardnerææ*. *Geniostoma* undoubtedly forms another genus of that tribe, as has already been ascertained by Mr. Brown, prodr. nov. holl. i. 455, and Tuckey's embassy to Congo, append. p. 448. According to this great botanist it is the same as Jussieu's *Anasser*, but different from *Caju Cutana* or *Anasser* of Rumphius, herb. amb.



auctuar. 12. t. 7, (quoted with a doubt as a congener by that author) that plant being a species of *Pittosporum*. I have not as yet seen the fruit, and the ovary is so small as to have hitherto entirely eluded my endeavours to ascertain its anatomy; but I dare say both will be found to correspond better with *Geniosoma* than with *Logania* of Brown, l. cit.

As the Nipal species of *Gardnera* alluded to in the first vol. of this work, p. 403, is both tetrandrous and pentandrous, I insert the description of it here, with an amended character of the genus and *G. ovata*:

*GARDNERA*, Wall. in Roxb. fl. ind. i. 400.

*Calyx* inferior, cup-shaped. *Corolla* rotate, with naked throat. *Anthers* erect, sometimes covering. *Stigma* obscurely two-lobed. *Berry* two-celled, two-seeded. *Seeds* cup-shaped.

1. *G. ovata*, Wall. l. c.

*Leaves* acuminate. *Corymbs* axillary, many-flowered. *Flowers* tetrandrous. *Anthers* cohering into a tube.

Introduced from Silhet into the Hon. Company's botanic garden at Calcutta, in 1815; it blossomed for the first time in April 1823.

2. *G. angustifolia*, Wall.

*Leaves* narrow-lanceolate, tapering into a long acumen. *Flowers* solitary, axillary, pentandrous. *Anthers* distinct.

I have found it common in forests on the mountains surrounding the valley of Nipal, blossoming during the rainy season, with ripe fruit in the cold weather.

A large, extremely branchy, climbing, perfectly smooth shrub, with long, slender, variously twisted and bent branches, covered with ash-coloured bark; all the young parts pale-green, and slightly glaucous.—*Leaves* opposite, most spreading, narrow-lanceolate, sometimes almost linear-lanceolate, tapering from a rounded base to a long, narrow, cuspidate acumen, from three to five inches long, not

exceeding an inch in breadth, their *texture*, *petiol*, &c. as in the preceding species.—*Peduncles* axillary, solitary, opposite, an inch long, clavate, at first nodding, afterwards erect, sometimes with a small plicate, gibbous, adpressed bractlet above the middle; one-flowered.—*Flowers* valvate and nodding during æstivation, becoming erect as they expand, tetrandrous and pentandrous, white, a little smaller than those of the first species, which they resemble in the calyx and corolla; the *laciniæ* of the latter recurved. *Anthers* erect, perfectly free. *Stigma* distinctly two-lobed, lobes short, fleshy, scabrous.—*Berry* scarlet, as large as a full-sized marrow fat pea, in all respects like those of *G. ovata*.—N. W.

*LECANANTHUS*, *W. Jack*, in *Mal. Misc.* ii.

*Calyx* campanulate, enlarged, coloured, divided irregularly. *Tube* of the *corolla* short; *limb* five-parted. *Ovary* bilocular, many-seeded, with convex, central *placentæ*. *Style* bifid. *Stigmas* two, linear, thick.

Nat. family, *Rubiaceæ* of Jussieu.

Shrubby; *flowers* in terminal, involucred heads. *Æstivation* valvate.

1. *L. erubescens*, *W. Jack*.

Found in the interior of Sumatra.

A small erect shrub; *stem* four-sided with two of the angles acute. *Leaves* opposite, short-petioled, ovate-lanceolate, acute at both ends, rather attenuated towards the point, entire, smooth; about eight inches long. *Stipules* interpetiolar, large, ligulate, carinate towards the base. *Flowers* pale-red, densely aggregated within the hypocrateriform cup of the involucre, forming a head which is terminal, nearly sessile, and turned backwards. Involucre monophyllous, entire. *Pedicels* none. *Calyx* superior, coloured, tomentose, thick and fleshy, much wider than the corol, expanding into two to four irregular, unequal, obtuse lobes; the calyces of the outer flowers are often

so much produced on one side as to seem bilabiate. *Corolla* with a short tube, segments five, acute, thick. *Æstivation* valvate. *Stamina* five, inserted on the tube; *anthers* large. *Ovary* crowned with a prominent nectarial ring, two-celled, polysporous; *ovula* arranged round central, semi-cylindrical placentæ. *Style* bifid. *Stigmata* two, thick and linear.—W. Jack. l. cit.

*Obs. by N. W.*

This little shrub, rather sparingly I have found at Singapore, nearly out of flower in the month of October, radicant on the root of trees. It has the appearance of a *Cephaelis*; the branches are two-winged; the head round, as large almost as a walnut, of a pink colour.—N. W.

*PSILOBIUM*, W. Jack, in *Mal. Misc.* ii.

*Calyx* spreading, five-parted. *Tube* of the *corolla* short; *limb* five-parted. *Stamina* inserted in the base of the *corolla*. *Stigma* clavate, ten-winged, exserted. *Fruit* cylindric, silquæform, crowned with the persistent calyx, bilocular, many-seeded. *Seeds* inserted on the axis in a double series.

Nat. fam. *Rubiaceæ* of Juss.

Shrubby. *Peduncles* axillary, few-flowered. *Æstivation* valvate.

1. *P. nutans*, W. Jack.

Found in the interior of Sumatra.

*Stem* erect, four-sided, with rounded angles. *Leaves* opposite, petiolate, lanceolate, attenuated at both ends, acute, entire, smooth. *Stipules* interpetiolar, broad, acuminate, carinate. *Peduncles* axillary, drooping, bearing from three to six flowers. *Bractes* forming a kind of involucre at the base of the very short pedicels. *Calyx* superior, very large, composed of five leaflets or very deep segments, which are veined with red. *Stamina* five; *filaments* short, *anthers*

long, erect. *Style* short. *Stigma* long, exsert, oblong-ovate, longitudinally ten-winged, the five alternate wings smaller. *Fruit* long, cylindrical, siliquose, crowned with the large persistent calyx, two-celled, many-seeded; seeds arranged in a double series in each cell. —W. Jack l. cit.

2. *P. tomentosum*, W. J.

Tomentose. *Flowers* axillary, sub-sessile.

Found at Katoun.

The fruit is baccate.—Jack. l. cit. addend.

### JACKIA, Wall.

*Calyx* unilateral, trisid. *Corolla* infundibuliform, with a filiform tube, and campanulate, five-cleft border. *Anthers* filiform, sessile in the throat. *Style* very long. *Stigma* two-lobed. *Capsule*? inferior, crowned with three large unilateral wings, one-celled? one-seeded?

In the Linnean system its place is *Pentandria Monogynia*, in the section with superior, monopetalous flowers.

In the natural arrangement of Jussieu it belongs to *Rubiaceæ*; but its precise station in that extensive family cannot be ascertained until the ripe fruit has been examined.

I have dedicated this new genus to the memory of my departed friend, the late Mr. Jack, whose premature loss I have already adverted to above (page 202,) and whose well known indefatigable labours in natural history have long ago entitled him to the highest respect. It was the amiable modesty of his character and not any neglect on my part, which prevented me from executing my design of naming a plant after that excellent botanist during his life time.

1. *J. ornata*, Wall.

A very large, branchy and umbrageous forest tree, which I disco-

vered on several of the small islands in the immediate vicinity of Singapore, in full blossom and with unripe fruits in October.

*Branchlets* thick and robust, obscurely quadrangular, thickly covered with long, soft, adpressed, ferruginous hairs; marked when old, with numerous vestiges of the fallen leaves and with the withered stipules.—*Leaves* very large, spreading, leathery, opposite, sub-decussate, short-petioled, crowded towards the end of the branchlets, where the pairs are scarcely an inch asunder, elliptic-obovate, from six to ten, or even twelve or fourteen inches long; entire, with even, regular, ciliate margins; cuspidato-acute; from three to six inches broad at the outer end, from thence gradually tapering downwards to the acute, narrow, sub-decurrent base; smooth and shining above, soft and villous underneath, with copious, short, ferruginous hairs, especially along the strong, very prominent rib, and numerous parallel, oblique, elevated nerves, which continue in a bent direction to the very margin; veins sub-simple, parallel, transversal between the nerves.—*Petiol* thick, round, villous, slightly channelled above, an inch long, a little margined from the sub-decurrent leaf, inserted on the base of the stipule.—*Stipules* large and leathery, connate, annular, sub-infundibuliform, entirely embracing the branch within the petioles, about half as long as they, sub-imbricating, hairy, especially within, with a truncate, widening margin, greenish, fringed with about ten filiform, erect, bearded processes, which are an inch long or more.—*Panicles* large, axillary, opposite, pendulous, on very long peduncles, hairy and villous, with spreading, opposite, slender branches, each terminating with a corymb of crowded, sub-dichotomous spikes. *Peduncles* compressed, very slender; *common* ones from four to six inches long; *partial* ones half that size, gradually diminishing in length; each supported by a pair of ample, fringed, connate *bractes*, which sometimes grow out at the margin into opposite, small floral leaflets.—*Flowers* white, inodorous, sessile, approximate, alternate, disposed in short, unilateral, villous spikes of an inch in length; each is supported by an oval, densely villous, dentate, persistent *bracte*; these *bractes* are alternate, sub-imbricate on the back of the spike.—*Calyx*

deeply divided into three, nearly equal, lanceolate, acute, spreading, unilateral laciniae, about two lines long; the two lateral ones are placed in a straight line and separated by two or three minute, subulate, fleshy, permanent toothlets, which seem to occupy the place of the fourth or wanting segment of the dimidiate limb. *Corolla* infundibuliform, densely villous on the outside, pubescent and purplish within, about half an inch long; *tube* most slender and filiform, twice as long as the calyx, widening into a short, campanulate, slightly plicate limb, divided into five, lanceolate, cuspidate lobes; *æstivation* valvate.—Throat pervious. *Anthers* five, long, linear, sessile in the throat of the corolla, inserted by their middle immediately under the fissures which separate the segments, alternating with them, semi-exserted, spreading. *Filaments* none except the obscure vanishing lines running down from the place where the anthers are inserted.—*Ovary* small, inferior, slightly turbinate, villous, two-celled, each cell containing a pair of erect ovula, inserted on the base of the partition.—*Style capillary*, nearly twice as long as the corolla, hairy and somewhat thickened at the middle third part. *Stigma* smooth, divided into two, small, parallel, lanceolate lobes.—I have only had opportunities of examining the fruit in an unripe state; it is somewhat fleshy, pink-coloured, pubescent, disposed at right angles in short, broad spikes; the wings closely imbricating, and crossing each other in the most elegant and symmetrical manner, form the anterior, broad, flattish part of them; and the unaltered sub-adjpressed floral bractes constitute the posterior, narrow side; the whole forming large, pink, pendulous, highly ornamental panicles. The body of the fruit small, turbinate, about two lines long, a little elevated and umbilicated at its free vertex; two-celled, with a pair of erect seeds at the bottom of each cell, or from the base of the partition; I conjecture that it becomes a capsule of only one cell and with only one seed, as I have frequently found one of the ovula seemingly enlarged and fecundated while the others remained minute and withered.—It is crowned with the large flat, spreading, unilateral lobes of the calyx, which are now

half an inch long, lanceolate, acute, rather narrow downwards, three-nerved, reticulate, that in the middle rather larger, the other two placed oppositely, and forming a straight line, in the centre of which are still to be seen the small subulate teeth which were noticed above; they are somewhat thick and convex at their base and separable to the bottom of the fruit, which perhaps is three-valved.—N. W.

### *ARGOSTEMMA, Wall.*

*Calyx* four or five-toothed. *Corolla* rotate, flat, four or five-parted. *Anthers* conniving, exserted. *Berry*? inferior, two-celled, many-seeded; *seeds* angular, inserted on a septal placenta.

A small, succulent, sub-diaphanous, pubescent, elegant, herbaceous plant, growing on rocks; with a simple stem, terminated by a few, opposite, unequilateral leaves. *Flowers* snow-white, largish with respect to the size of the plant, valvate and pyramidal during æstivation, disposed in terminal racemes or umbells.

In the Linnean system they claim almost an equal right to *Tetrandria* and *Pentandria Monogynia*, in the section with monopetalous, superior flowers.

It belongs to *Rubiaceæ* of Juss.; I know of no genus in that extensive family to which it has any very particular resemblance.

#### 1 *A. sarmentosum, Wall.*

Somewhat villous, creeping at the base and stoloniferous. *Leaves* in two most approximate pairs, ovate, sub-sessile. *Flowers* tetrandrous.

*Begonioides Jila*, Hamilt. Mss. fide ic. pict. in hort. bot. Calc. asservat.

I found this elegant little plant on the hills at Shukragiri near Rajmahal, growing on rocks and blossoming in August. During my stay in Nipal, my people brought me also specimens from the mountains to the Northward of the valley on the route to Gosain-Than, in flower during the rainy season.

Root consisting of short, capillary fibres.—*Stem* simple, slender, round, pubescent, succulent, pallid, from four to five inches long, creeping at the base and sending forth one or two pairs of very long filiform runners; each having a few remote pairs of ovate scales, sometimes with a verticil of small leaves; the upper part of the stem erect, naked, except at the apex.—*Leaves* four, sub-sessile, spreading, disposed at the upper end of the stem in two most approximate, decussate pairs, so as to appear verticilled; they are of an oval form, obtuse, with unequal sides, and entire, gently waved margins; unequal in size, one of the pair being twice as large as the other, and those of the uppermost pair smaller than those below, from one to three inches long, base rounded, or somewhat acute; membranous, a little pubescent on both sides; lucid above, whitish and silvery underneath, with a thick, convex, villous rib and oblique nerves.—*Petiol* very short, stem-clasping. *Stipules* none.—*Flowers* snow-white, scentless, from eight to ten, disposed in a terminal umbel or corymbiform raceme, on longish, clavate, fleshy peduncles, supported by ovate, entire or notched bractes, half their own length. *Calyx* very small, concave, pubescent, divided into four ovate, acute, teeth.—*Corolla* five times larger than the calyx, flat, spreading, deeply divided into four lanceolate, acute segments, alternating with the teeth of the calyx, greenish towards the base.—*Tube* scarcely any.—*Filaments* very short, inserted in the throat, alternating with the laciniae, bent downwards and towards one-side. *Anthers* long, erect, conniving, acuminate, bursting along the margins.—*Ovary* underneath, a little hairy, globular, small, two-celled, *ovula* numerous, inserted on two septal placentae. *Style* as long as the stamina, a little bent at the base. *Stigma* fleshy, convex.

*Obs.* I have not seen the ripe fruit of this or of the next species. It is to be remarked that the parts of the flowers, never exceed five, though I have observed them sometimes to be ternary.—N. W.

2. *A. verticillatum*, Wall.

Pubescent, erect, cespitose. *Leaves* four, verticilled, linear-



lanceolate, sub-falcate. *Peduncles* two or three, rarely solitary, few-flowered.

A native of Nipal, where I found it on rocks at Moreko in the valley, in flower in July and August.

*Root* fleshy and almost tuberous, short, with capillary fibres.—*Stems* caespitose, entire, from three to four inches high, filiform, round, with a pair or two of minute lanceolate, connate scales.—*Leaves* four, verticilled round the apex of the stem, lanceolate, acuminate, of unequal size, from one to two inches long, with unequal sides; ciliate, pubescent, entire, most spreading, attenuate and acute at the base, almost sessile; shining above, whitish underneath; they are mostly bent towards one side, which makes the verticil appear dimidiate.—*Peduncles* two or three, rarely solitary, terminal, filiform, one or two inches long, smooth, bearing three or four umbelled flowers, which are smaller than those of the preceding species, but otherwise perfectly resembling them; their parts quatern or quinate. The mouth of the corolla is marked with ten minute tubercles, alternately receiving the basis of the filaments.—*Cells* of the anthers opening obliquely towards the apex. *Ovary* smooth.—N. W.

### 3. *A. rostratum*, Wall.

Erect, smooth. *Leaves* in several pairs, narrow-lanceolate, acuminate, petioled, stipuled. *Umbels* many-flowered. *Lacinia* of the corolla and tube of the anthers acuminate.

Found by my plant-collector on the Pundooa mountains near Silhet, in flower in July.

*Root* fibrous. *Stem* ascending, slender, from six to eight inches long, perfectly smooth, as are all the other parts; with several remote pairs of lanceolate, ciliate scales; the uppermost occasionally enlarged, foliaceous.—*Leaves* in two or four most approximate pairs at the apex of the stem, narrow, lanceolate, from one and half to three inches long, tapering into a long acumen, on short petiols, perfectly smooth.—*Stipules* interpetiolar, oval, recurved, persistent. *Umbel* terminal, many-flowered, sometimes compound, lifted up on a slender

der peduncle, nearly equalling the leaves in length, naked, or with a pair of scales above the middle.—*Pedicels* an inch long, clavate, a little ventricose above the middle. *Bractes* lanceolate, acuminate, veined.—*Corolla* nearly an inch in diameter; its laciniae finely acuminate. *Anthers* very long, forming a lengthened, beaked, straight tube.—*Style* capillary. *Stigma* minute above the orifice of the tube of the anthers.

*Obs.* At a distance this species has much the appearance of *Trientalis europaea*. It is closely allied to that last described, and is the tallest in the genus.—N. W.

#### 4. *A. pictum*, Wall.

*Stems* short. *Leaves* smooth, ovate, sub-cordate, pointed, with reticulate white nerves. *Umbels* many-flowered, pentandrous.

I found this beautiful little species growing on rocks near the waterfall on the island of Pinaug, in flower in August.

*Root* consisting of a fascicle of longish, capillary fibres.—*Stem* an inch or two long, smooth. *Leaves* two, opposite, terminal, or in two somewhat remote pairs; ovate, acute, rounded or sub-retuse at the base, unequal among themselves as well as with respect to the sides; smooth, slightly ciliate, of a dark green colour, beautifully reticulated with white lines along the rib and the principal ramifications of the nerves.—*Petiol* very short.—*Peduncle* terminal as in all the other species, nearly as long as the leaves, simple or having two opposite branches, each bearing a round umbel of many small, white, pentandrous flowers.—Unripe *berry* as large as a coriander seed, smooth.—*Seeds* angular.—N. W.

#### LASIANTHERA, Beauv. Fl. Owar. et Benin. i. 85. t. 51.

*Calyx* very small, five-toothed, supported by one or two subulate bractes. *Corolla* tubular, larger than the calyx, with a short tube and five deeply divided, lanceolate laciniae. *Filaments* broad and membranous, with hairy anthers. *Germ* ovate above. *Style* short. *Stigma* capitate. *Fruit*.. Pal. de Beauv. l. c.

1. *L. ? tetrandra*, Wall.

*Corymbs* short, axillary; *flowers* tetrandrous, four-cleft.

A native of the mountains bordering on the district of Silhet, and from thence communicated to me in 1815, by the late Mr. M. R. Smith. It blossoms in May and ripens its fruit in September.

*Beng.* Pathur-sik.

A smooth shrub, with round, slender, slightly flexuose, alternating, ash-coloured branches, marked with two, slightly elevated lines, which run down from the insertion of the leaves; while young green, somewhat glaucous.—*Leaves* spreading, alternate, twice or thrice as long as their interstices, rather leathery, oblong, terminating in a narrow acumen of half an inch in length, acute at the base, entire, from five to six inches long, perfectly smooth, shining, with elevated rib and alternating, oblique nerves underneath, which unite in sub-marginal arches, a little reticulate; when held toward the light they appear copiously but very minutely dotted. *Petioles* very short, scarcely exceeding one-third of an inch in length, deeply channelled above, while young a little pubescent, their axils naked, not ciliate.—*Stipules* none.—*Peduncles* axillary, solitary, shorter than the petioles, pubescent, with bifid apex, bearing a small rounded corymb of white *flowers*, each of which is supported on a short fleshy pedicel, with scattered minute bractes.—*Calyx* extremely small, cup-shaped, four-toothed, obscurely ciliate.—*Tube* of the corolla cylindric, four times as long as the calyx; *limb* divided in five, spreading, ovate laciniae, the apices of which are a little vilous within. *Æstivation* pyramidal, valvate. *Stamina* four, hypogynous, erect, nearly as long as the corolla, alternating with its laciniae.—*Filaments* flattish, somewhat fleshy, clavate, filiform at the base, which is inserted so as to unite with the tube, round the ovary; broad, obtuse, and hairy at the apex. *Anthers* adnate to the inside of the apex of the filament, a little below it, consisting of two oblong cells, bursting inwardly, somewhat diverging downwards. *Ovary* small, oblong, smooth. *Style* none. *Stigma* fleshy, broadish, sub-capitate. *Berry* clavate, oblong, smooth, of an aqueous whitish colour (like that of a white currant),

about an inch long, having at the broadest vertex a rudiment of the stigma; one-celled, one-seeded. The flesh is soft, sub-diaphanous. — *Receptaculum* no other than the bottom of the cell from whence rises an umbilical chord, which surrounds the seed longitudinally like a band. *Seed* rather large, clavate, with a swelled *umbilicus*. — *Integument* simple, chartaceous, grayish, striated with parallel, longitudinal veins, adhering firmly to the pulp; smooth and silvery within. *Albumen* none. *Embryo* conform to the seed, inverted, white. *Cotyledons* very large, semicylindric, amygdaloid, obtuse, their inside flattened and contiguous, the outer one convex and turgid. — *Scape* long, cylindric. *Plumula* very large and conspicuous between the cotyledons, consisting of two, ovate, acute lobes. *Radicle* superior, inserted between the base of the cotyledons.

*Obs.* I am very doubtful whether this can be considered as a species of the genus established by M. Palisot de Beauvois, whose work quoted above, I have not had access to. In the event of its proving distinct I would propose *gomphandra* as the generic name for it. It was not until I had by repeated examination satisfied myself of the fact, that I could persuade myself not to consider what I have described above as the cotyledons, to be a real perisperm, and the plumula to be the cotyledons. The facility, however, with which the former admits of being divided into its two lobes, places the matter in its true light, and it follows that the seed is *exalbuminous*. The scape is remarkably long, bearing at the apex a proportionally large plumula; which reaches almost to the middle of the cotyledons, which constitutes the radicle, its base is placed between the upper ends of the latter. The habit of the shrub is much like that of a *Limonia*, to which indeed it approaches also by its dotted leaves; the natural order to which it belongs may perhaps be *Apocynæ*. Can it be a *Wallenia*? I have unfortunately omitted examining the structure of the ovary, which would have thrown some light on this question, by shewing at least whether or not the plant belongs to the family of *Myrsinæ*, to which Mr. Brown refers the last mentioned genus. — N. W.

**CORDIA, Schreb. gen. N. 350.**

*Calyx* one-leaved. *Corol* sub-campanulate, five-parted. *Germ* four-celled, cells one-seeded, attachment lateral. *Drupe* superior, with a four-celled nut, one or two of which are only fertile. *Embrya* inverse, without perisperm.

**1. C. latifolia, R.**

Polygamous. *Leaves* round-cordate, entire and repand, three-nerved. *Panicles* terminal and lateral. *Drupe*s oblate-globose, on a smooth calyx. Nut from one to four-seeded.

*Sung.* शेलूः, Sheloo, श्लेष्मातकः, Shleshmatuka, शीतः, Sheeta, उद्दालः, Ooddala, वहुवारकः, Vuhoovaruka, वहुवारः, Vuhoovara, पिच्छिलः, Pichhila, द्विजकुलितः, Dwijukootsita, शीतफलः, Sheetuphula, शाटकः, Shatuka, कम्बुदारकः, Kumboodaruka, भूतद्रुमः, Bhootudrooma, गन्धपुष्पः, Gundhupoosha, भूतदृक्षकः, Bhootuvrikshuka.

*Hind.* Bura-lesaora.

A native of Hindoosthan and introduced by the late General Martin, into the botanic garden at Calcutta, where it blossoms during the cold season; and the fruits ripen in June and July. They are much larger than those of *C. myra*, smooth, and of a beautiful pale straw colour covered with a whitish bloom.

*Trunk* short and generally crooked, as in *Myra*; the bark also scabrous and crooked. *Branches* numerous, spreading, and drooping; *young shoots* angular and smooth; the general height of trees ten or twelve years old is about twenty feet.—*Leaves* alternate, petioled, from round to cordate and ovate, often slightly repand, three-nerved; texture hard, smooth above, scabrous and pale underneath, from three to seven, or even eight inches long, and rather less in breadth.—*Petiols* nearly round, and smooth.—*Stipules* none.—

*Panicles* short, terminal and lateral, roundish; *ramifications* alternate, diverging, and once or more dichotomous.—*Flowers* numerous, small, white.—*Bractes* minute, villous.—*Calyx* villous, campanulate, leathery; *mouth* unequally dentate.—*Corol* short, campanulate; *segments* five, linear-oblong.—*Filaments* as long as the segments of the corol, and inserted immediately under their fissures. *Anthers* incumbent.—*Germ* ovate, four-celled; with one ovulum in each attached to the upper end of the axis. *Style* short. *Stigma* four-cleft; *segments* four-cleft, long, rugose, and recurvate.—*Drupe* oblate-spheroidal, about an inch or an inch and a quarter in diameter, smooth, when ripe yellow. *Pulp* in large quantity, soft, clear, and very clammy; (the natives eat it freely,) one-celled. *Nut* nearly circular, laterally compressed, rugose on the outside, with a cavity at each end, the lower one deeper than the other, exceedingly hard, four-celled, though rarely all fertile.—*Seed* solitary, ovate-oblong. *Integument* single, white, soft and oily. *Plumula* very small. *Radicle* conic, superior.

Mr. Henry Colebrooke, who is intimately acquainted with Hindoo literature, informs me that the writers on Indian *Materia medica* notice two sorts of *Sepistan*. The first as large as a prune, with its nut immersed in mucilaginous pulp, and separable from it. The second smaller, with its nut adhering to the pulp (as described by our writers on *Materia medica* in Europe), but with less mucilage, and sweeter than the large one. The rest of the descriptions, he observes, is common to both kinds, viz. The leaf round, the fruit growing in clusters, when ripe yellow, but afterwards turning black, &c.

The first, or large sort, is no doubt, the fruit of the tree just now described; and the small sort that of *Cordia Myxa*, which has hitherto, I believe, been considered in Europe, as the only tree which produces this drug; but from the information furnished by Mr. Colebrooke we have reason to believe there are two sorts used in medicine by the *Asiatics*, which are the produce of two trees of the same

genus, and that the Arabic and Persian names *Sepistan* and *Pistan*, are applicable to both sorts.

It might be well to give the trivial or specific appellation *Sepistana* to this broad-leaved tree, which for the present I have called *latifolia*; and the scarlet-flowered West India tree, now called *Sebestena*, I would term *coccinea*. *Novella nigra*, *Rumph. amb. 2. p. 226. t. 75*, is no doubt a distinct species, which I have seen and examined, and call *Cordia campanulata*.

2. *C. Myra*, *Willd. i. 1072*.

Polygamous. Leaves oval, repand. Panicles terminal, and lateral.

*Vidi-marum*, *Rheed. mal. 4. t. 37*.

*Sebestena officinalis*, *Gaert. sem. 1. p. 363. t. 76*.

*Sung.* भूकम्बुदारकः, *Bhookumboodaruka*, क्षुद्रश्लेष्मातकः, *Kshoodrashleshmatuka*, भूशेलुः, *Bhoosheloo*, लघुपिच्छिलः, *Lughoopichhila*, लघुश्लेष्मा, *Lughoosheeta*, सूक्ष्मफला, *Sookshmaphala*, लघुभूतद्रुमः, *Lughoobhootudrooma*.

*Beng.* Bohoori.

*Hind.* Lusora, or Lesoora.

*Teling.* Nekra.

The dried fruit of this tree is the *Sebestena* of the *materia medica*.

It is a pretty large, but low tree, growing in most part of the Circars but chiefly in gardens, hedges, &c near villages. Flowers about the end of the temperate, (or cold) season, and the fruit is ripe in May and June.

*Trunk* generally crooked, from eight to twelve feet high, and as thick or thicker than a man's body. *Bark* grey, cracked in various directions. *Branches* numerous, spreading, and bent in every possible direction, forming a dense shady head.—*Leaves* scattered, petioled, ovate, oval, or obovate, exterior half slightly scalloped, or toothed, smooth above, below a little scabrous when old; from two

to three inches long, and from one and a half to two broad.—*Petioles* about one-third the length of the leaves.—*Stipules* none.—*Panicles* terminal, and also lateral, globular, dichotomous.—*Bractes* none.—*Flowers* numerous, small, white, a very large proportion of them are sterile, and they always want the *style*.—*Calyx* tubular, widening towards the mouth and there torn as it were into three or five divisions, smooth, not in the least striated.—*Corol*, divisions of the border revolute.—*Style* in the *fertile flowers* as in the genus, in the *barren flowers* wanting.—*Drupe* globular, smooth, the size of a cherry, sitting in the enlarged calyx, when ripe yellow, the pulp is almost transparent, very tough and viscid. *Nut* cordate, at both ends bidentate and perforated, rugose, somewhat four-sided, four-celled, but it rarely happens that all prove fertile.—*Seeds* solitary.

The smell of the nut when cut, is heavy and disagreeable, the taste of the kernels like that of fresh filberts. The fruits are not used in this part of India, (the Northern Circars), for any medicinal purpose. When ripe they are eaten by the natives, and also, most greedily, by several sorts of birds, being of a sweetish taste.

The wood is soft, and of little use except for fuel. It is reckoned one of the best kinds for kindling fire by friction.

#### *Obs. by N. W.*

This is the only species of the genus which inhabits that part of Nipal which I have visited; I found it growing wild at Bheemped, in flower in May.—N. W.

#### 3. *C. serrata*, R.

Arboreous, tender parts hairy. *Leaves* ovate-cordate, serrate, acuminate. *Corymbs* lateral. *Flowers* sub-octandrous; with from seven- to nine-cleft corol.

A native of Travancore, from thence the seeds were sent by Dr. A. Berry to the botanic garden at Calcutta, where the plants reared from them blossomed in August, when four years old.



*Trunk* in our young trees, from eight to ten feet high, and about as thick as a man's thigh. *Branches* very numerous, spreading in every direction. *Bark* of the old woody parts smooth, olive-coloured, that of the *young shoots* green, and hairy. *Leaves* alternate, rather long-petioled, ovate-cordate, serrate, acuminate, a little harsh, with few hairs, from four to six inches long, and from two to four-broad.—*Stipules* none.—*Corymbs* lateral, and about the forks of the branchlets, long-peduncled, dichotomous.—*Flowers* white, of a middling size.—*Calyx* sub-cylindric; mouth from three- to five-toothed, with the inside hairy.—*Corol* with a cylindric tube, the length of the calyx, border about eight-cleft; *segments* oblong, recurved.—*Filaments* about eight, hairy, inserted on the tube of the corol below its middle. *Anthers* ovate, small.—*Germ* superior, conical, four-celled, with one *ovulum* in each, attached to the axis. *Style* two-parted, as are also the segments.

4. *C. monoica*, Willd. i. 1072. R. *Corom.* 1. 58.

*Leaves* ovate, three-nerved, scabrous. *Corymbs* axillary and terminal, with many male flowers. *Nut* four-celled.

*Teling.* Panugeri.

*Hind.* Pida.

A small, irregular, poor looking tree, with grey bark, chiefly a native of the Circar forests, where barren land predominates. *Leaves* deciduous during the cold season. The *flowers* are produced during the rainy season.

*Leaves* alternate, petioled, ovate, three-nerved, very scabrous; about three inches long, and two broad.—*Petioles* round, scabrous, about an inch and a half long.—*Panicles* from the divisions of the branchlets, or terminal, small, two-forked, composed of short, recurved, one-ranked spikes.—*Flowers* white. There is a very large share of male or barren flowers which generally occupy distinct parts of the corymbs, and frequently the whole. *Hermaphrodite flowers* as in the family. *Drupe* the size of a cherry, pointed, yellow, pulpy:

pulp glutinous, as in *Myxa*. Nut perforated at the apex, four-celled. The male flowers want the style entirely, but have the rudiment of a germ.

### 5. *C. grandis*, R.

Leaves round-cordate, obtuse, entire, scabrous, sub-triple-nerved. Panicles terminal, drooping. Flowers tetrandrous.

A large quick growing tree, native of Chittagong; in the Hon. Company's botanic garden its leaves are often a foot long; its immensely large, dichotomous, very ramous panicle nearly as much; the calyx has an even surface and four-toothed mouth.

### Obs. by N. W.

The trees were introduced into the Hon. Company's botanic garden in 1810, and have since grown very large. One of the individuals measures, at present (1823) two feet ten inches in circumference, at four feet above the ground.—It blossoms in the rainy season and ripens its fruit in March.

The leaves are rounded or retuse at the base, their apex acute or obtuse, the margins often remotely dentate, the nerves and rib are much elevated on the under surface, the lowermost pair or two of the former are opposite, giving the leaf an appearance of being tripli-nerved. Ramifications of the panicle many times dichotomous, divaricate, these with the petiols and young leaves are covered with ferruginous villosity.—The drupe is of a dirty yellowish colour, smooth, slightly depressed at the apex, half an inch long, supported by the enlarged, obscurely many-toothed, striated calyx, narrowing towards the insertion of the peduncle, where it is concave, truncate, with a prominent margin. Pulp very glutinous, traversed longitudinally, especially towards the outer coat of the drupe by a number of milk-white vessels. Nut very hard and bony, four-cornered, perforated, four-celled, two or three of the cells mostly abortive,—  
N. W.

6. *C. campanulata*, R.

Leaves long-petioled, ovate-cordate, repand, acute. Panicles lateral. Corol campanulate. Drupes ovate, dry, hid in the permanent calyx.

*Novella nigra*, Rumph. Amb. 2. t. 75. is no doubt this plant, though it has hitherto been quoted for *Cordia Sebestena* which is also now before me from the West Indies, in full blossom in the botanic garden at Calcutta, and differs from *Novella nigra* in the following respects.\*

1st. In having larger, cordate, almost entire, obtuse, scabrous leaves; whereas in *C. campanulata* they are smaller, longer-petioled, more ovate; repand, and very acute.

2d. In having corymbiform terminal panicles, with infundibuliform corols; on the other hand in *campanulata* the panicles are lateral, and the corol campanulate. In both the calyx, stamens, and pistillum are nearly alike.

Drupe (in *campanulata*) ovate, pointed with the permanent base of the style, and completely covered with the thin dry permanent calyx; instead of pulp, as in the other species, there is a thick coat of a dry, firm, friable texture, scarcely differing in colour from the nut.—Nut five-ribbed, with as many fluted grooves between, very hard, light brown, adhering firmly to its friable covering, four-celled, though it is rare to find all fertile, perforated up through the centre.—Seed solitary, ovate, pointed. Integument single, pure white, thick, soft, and tender.—Perisperm none.—Embryo inverse, pure white. Cotyledons deeply grooved, as in *Sebestena officinalis*, Gaert. sem. 1. 364. t. 76. p. 1. Plumula small, two-lobed. Radicle roundish, superior.

\* Sir J. E. Smith has hinted at this difference in Rees's Cyclopaedia, under *Cordia*.—The trees of *C. Sebestena* which we possess at the botanic garden produce their charming flowers in great profusion annually, during the hot season, and they appear otherwise vigorous and enduring the climate of Bengal perfectly well. It is therefore the more to be regretted, that all our endeavours to increase them, by inducing them to produce fruit, or multiplying them by cutting, laying, or grafting, have hitherto proved utterly abortive.—N. W.

7. *C. muluccana*, R.

*Leaves* long-petioled, ovate-cordate, obtuse, entire, smooth. *Panicles* axillary and terminal, shorter than the leaves; calyx gibbous, inside hairy. *Style* twice two-cleft. *Drupe* pointed, and nearly hid in the calyx; *nut* four-celled.

A native of the Moluccas. This species is often tetrandrous. The filaments are short, and very hairy; as is also a rim round the mouth of the gibbous tube of the corol, where they are inserted.

8. *C. polygama*, R.

Polygamous. *Leaves* ovate-cordate, entire, scabrous. *Panicle* terminal. *Male* generally tetrandrous, *hermaphrodite* often pentandrous.

A tree, a native of the mountains of Coromandel. Flowers about the month of May and the seeds ripen in August.

*Trunk* tolerably straight, but short. *Bark* pretty smooth, of a dark olive colour. *Branches* spreading; *young shoots* round and scabrous. — *Leaves* alternate, petioled, from ovate to cordate, entire, or slightly scallop-toothed; when young soft and villous, when old scabrous, from one to six inches long, and about three-fourths of that broad. — *Stipules* none. — *Panicles* terminal, in the male more divided, pubescent. *Flowers* small, white.

HERMAPHRODITE FLOWERS on a separate tree. — *Calyx* narrow-campanulate; *mouth* irregularly four- or five-toothed, villous on the outside. — *Corol* funnel-shaped. *Border* four- or five-cleft; divisions linear, revolute. — *Filaments* four, or five, shorter than the segments of the border of the corol. *Anthers* incumbent. — *Germ* superior, ovate, four-celled, with one *ovulum* in each, attached to the axis. *Style* twice two-cleft. *Stigma* rather small, but rounded. — *Drupe* oval, the size of a black currant, smooth, when ripe yellow. *Pulp* mucilaginous, as in the officinal fruit of *C. myxa*, one-celled. *Nut* very hard, ovate, longitudinally perforated through the centre, four-celled. — *Seed* solitary, ovate, &c. &c. almost exactly as in *Sebestina officinalis*, Gaert, sem. 1. p. 264. t. 76. p. 1.

**MALE FLOWERS** on a different plant. *Calyx* and *corol* as in the hermaphrodite, but more generally divided into four.—*Filaments* generally four, as long as the corol.—*Germ* a spherical, abortive body, without style or stigma.

*Obs.* In the early part of my botanical career, a very short description and drawing of the male plant were sent with my other dispatches of the same nature, to the Honourable the Court of Directors under the name *Callicarpa alternifolia*, Roxb. N. 165.

### 9. *C. angustifolia*, R.

*Leaves* sub-opposite, lanceolate, scabrous. *Panicles* terminal. *Flowers* tetrandrous. *Style* twice two-cleft. *Nut* four-celled.

A native of Mysore, from thence Dr. Buchanan sent the seeds to the botanic garden at Calcutta, in 1800, and in May 1803, the young trees were in blossom for the first time.

*Trunk* short. *Branches* numerous, spreading in every direction, with their long, slender extremities, often drooping. *Bark* ash-coloured and pretty smooth.—*Leaves* sub-opposite, petioled, lanceolate, generally entire, obtuse, scabrous, particularly when dry; about four inches long, by one broad.—*Petioles* short, channelled.—*Stipules* none.—*Panicles* terminal, corymbiform.—*Flowers* numerous, small, white.—*Calyx* cylindric; mouth obscurely four-toothed.—*Corol*. *Tube* longer than the calyx. *Border* of four linear, revolute divisions.—*Filaments* four, inserted just below the divisions of the border.—*Style* two-cleft, with two-cleft divisions.—*Drupe* the size of a large pea, round, smooth, yellow, when ripe the pulp is yellow, gelatinous, and pellucid. *Nut* four-celled, though seldom more than one seed comes to maturity,

*Obs. by N. W.*

This is *Cordia reticulata*, Roth. nov. spec. 124, et Syst. Veg. iv. 454.—N. W.

*Additional species by N. W.*10. *C. tomentosa*, Wall.

*Leaves* round-ovate, more or less cordate at the base, repand, entire, smooth above, very soft and tomentose underneath. *Calyx* ovate, villous within.

Specimens are preserved in Dr. Heyne's collection under the name *C. obliqua*, var.

The densely tomentose, soft, round-ovate, acute, cordate or emarginate leaves distinguish this species from *C. Myxa*, (of which *obliqua*, Willd. is probably only a variety) and all the other species known to me. *C. domestica*, Roth. comes near to it, but differs in the figure and comparative smoothness of the leaves.—The flowers are largish; *style* twice dichotomous, with bifid lobes.—N. W.

11. *C. acuminata*, Wall.

Arboreous, smooth. *Leaves* oblong-ovate, acuminate, entire. *Corymbs* terminal, short, dichotomous, with infundibuliform flowers, and smooth, deeply divided calyces.

A native of Silhet, where it was found in flower by Mr. De Silva in February.

Beng. Ramutti.

A middle-sized tree, with smooth, rounded branchlets.—*Leaves* scattered, longer than their interstices, measuring about five inches, ending in a short acumen, perfectly smooth, coriaceous, with acute base and parallel nerves underneath. *Petiol* an inch long, deeply channelled.—*Corymbs* of an oval form, short-peduncled, twice or thrice dichotomous, a little pubescent, with short unilateral spikes of infundibuliform white flowers; they are mostly produced while the tree is quite naked of leaves.—*Corolla* smooth, with the tube at least twice as long as the calyx, which is deeply divided into five, lanceolate, acute, ciliate lobes; *laciniæ* bent backwards.—*Stamina* elevated

above the throat, considerably shorter than the style, which is bifid at the apex. *Stigma* crenulate, waved.—N. W.

*EHRETIA*, Schreb. gen. N. 352.

*Calyx* five-parted. *Corol* one-petalled, five-parted. *Stigma* two-cleft. *Drupe* superior, with a four-partible nut, or with one or two from two- to six-celled nuts.

1. *E. serrata*, R.

*Leaves* broad-lanceolate, serrate, five-pointed, smooth. *Flowers* paniced. *Style* half two-cleft. *Drupe*s with two two-celled nuts.

This tree has been introduced from Bhotan, and is now growing and bearing fruit in Dr. Glass's garden at Bhagulpooa. It is also a native of the eastern part of Bengal. Flowering time the beginning of the hot season.

*Leaves* alternate, petioled, oblong, and broad-lanceolate, acutely serrate, smooth on both sides; from two to five inches long, and from one to two and a half broad.—*Petiols* short, slender, and smooth.—*Stipules* none.—*Panicles* terminal, and from the exterior axils, ovate-oblong, with numerous, short, spreading, compound, and simple ramifications.—*Flowers* small, numerous, collected into small, somewhat remote, sub-sessile fascicles; some of them hexandrous.—*Bractes* ovate, small, pressing on the calyx.—*Calyx* five-cleft.—*Corol*. *Tube* as long as the calyx; divisions of the border oblong and spreading.—*Filaments* in the mouth of the tube of the corol, and rather shorter than the border. *Anthers* ovate.—*Germ* roundish.—*Style* as long as the stamens, half two-cleft. *Stigma* obtuse.—*Drupe*s round, pulpy, when ripe red, and about the size of a pea.—*Nuts* two-celled, they are flat on one side, and convex on the other. The above description is taken from trees sent to the botanic garden by Dr. Glass, who says the fruit is delicious. Plants of the same have also been received from Dr. Buchanan, but with him, about Lak-

shmeepoora where the tree is indigenous the fruit is not esteemed, indeed they have little or no pulp on them. The others have but little, what they have is, however palatable. Both now have been twelve years in the botanic garden. The trees are about thirty feet high, ramous, and stout in proportion.

*Obs. by N. W.*

This is among the more common trees of Nipal where it is called Nulshima. It grows both on mountains and in valleys, blossoming most profusely in the summer, and ripening its fruit during the rains. The latter are not touched by the natives. The flowers spread a honey-like powerful smell. In Silhet this species is called *Kala Oja* (কলা ওজা).—N. W.

2. *E. laevis*, Willd. i. 1077. *Roxb. Corom.* 1. 56.

Arboreous. Leaves ovate, smooth. *Corymbs* lateral, composed of dichotomous, recurved, secund spikes. *Drapes* with a four-partible nut.

*Teling. Seregada.*

The species grows to be a pretty large tree. It is a native of the Circar mountains.\*

*Trunk* erect. *Bark* ash-coloured. *Branches* numerous, nearly erect.—*Leaves* alternate, short-petioled, oval, sometimes scalloped, pretty smooth, from three to four inches long, and two or three broad.—*Corymbs* lateral or axillary, two-forked, composed of thin, recurved, one-ranked spikes.—*Flowers* white, small.

The parts of fructification as in the last, except that here the seeds or nuts are wrinkled on the outside. The chief specific difference is in the corymbs, there they are terminal, here lateral or axillary.

The wood of this tree is used by the hill people for many purposes.

\* It is abundant in some parts of Bengal. *EL.*



3. *E. aspera*, Willd. spec. i. 1077. Roxb. Corom. 1. 55.

Shrubby. *Leaves* ovate, above scabrous, below downy. *Corymbs* terminal, dichotomous. *Drupe* with a four-celled nut.

*Teling*. Tella-joovi.

A small bushy tree, a native of dry rocky barren places. Flowers during the wet season.

*Trunk* and larger *branches* covered with dark, rust-coloured bark; *young shoots* downy.—*Leaves* alternate, petioled, ovate, above scabrous, downy underneath, from two to three inches long, and from one to two broad.—*Petioles* channelled, about an inch long.—*Corymbs* terminal, globular, composed of dense, recurved, one-ranked spikes; *divisions* always two-forked.—*Flowers* very small, white.—*Calyx*; divisions ovate, outside downy.—*Corol.* Tube gibbous.—*Style* two-cleft. *Stigma* simple.—*Berry* the size of a grain of pepper, red, marked with four angular elevations, corresponding with the angles of the four-celled nut.—*Nut* four-celled, or by exposure four-partible, smooth.

*Obs. by N. W.*

*E. tomentosa*, Roth. nov. spec. 126, (altered to *E. Heynii* in syst. veg. iv. 532, the former name being preoccupied) is certainly the above tree, of which specimens are preserved in Dr. Heyne's collection labelled *E. tomentosa*.—N. W.

4. *E. uniflora*, R.

Shrubby, twiggy. *Leaves* crowded, sub-sessile, oblong, entire, hairy. *Flowers* solitary, sub-sessile. *Drupe* with four one-celled nuts.

A native of the Moluccas.

5. *E. setosa*, R.

Tender parts bristly. *Leaves* ovate-cordate, acuminate. *Panicle*

terminal, composed of dichotomous, secund, recurved spikes.  
*Drupe* with four one-celled nuts.

A native of the Island of Hamoa.

6. *E. buxifolia*, Willd. i. 1079. *R. Corom. pl.* 1. N. 57.

Shrubby. *Leaves* wedge-shaped, apex tridentate, scabrous, peduncles from two- to six-flowered. *Nuts* five- or six-celled.

*Cordia retusa*, Vahl. *ymb.* ii. p. 42.

*Teling.* Bapana-booree.

A middling-sized, ramous shrub or small tree, very common on barren lands and in forests. Flowering time the wet season.

*Leaves* on the young shoots alternate, on the former branchlets fascicled, sessile, reflexed, wedge-formed, very scabrous, very hard above, shining, from half an inch to an inch long, and a quarter or half an inch broad.—*Peduncles* from amongst the leaves on the woody branchlets, from two- to six-flowered.—*Pedicels* very short.—*Flowers* small, white.—*Calyx* five-parted, divisions lanceolate, as long as the corol.—*Corol* campanulate. *Border* five- or six-cleft.—*Stamens* five or six, shorter than the corol.—*Style* two-cleft. *Stigmas* simple.—*Berry* the size of a pea, succulent, red.—*Nut* five- or six-celled.

7. *E. internodis*, Willd. i. 1077.

Arboreous. *Leaves* oblong, entire, smooth. *Panicles* terminal and lateral.

Found indigenous at the *Mauritius* by Colonel Hardwicke.

#### *Additional species by N. W.*

8. *E. macrophylla*, Wall.

Arboreous. *Leaves* ovate, acute, sharply dentate, harsh, with short stiff hairs above, soft and pubescent underneath. *Panicle* terminal.

An inhabitant of Chundra-giri in Nipal, where I found it with unripe fruit in June.

A large tree. *Branchlets* round, with ash-coloured, callous, dotted

bark ; while young slightly villous, with short pellucid hairs.—*Leaves* alternate, coriaceous, rigid, spreading, from five to ten inches long, ovate, acute at both ends, sometimes rounded at the base, copiously and unequally cuspidato-dentate, dark green, harsh, with short vesicular hairs above ; pubescent and softish underneath, with alternate, oblique nerves, uniting in sub-marginal arches and reticulate veins.—*Petiol* pubescent and furrowed above.—*Panicle* terminal, pubescent, ramous. *Pedicels* racemose. *Drupe* globular, ovate, obscurely four-furrowed, slightly dotted, of the size of a small gooseberry, terminated by the long bifid style, supported at the base by a five-cleft calyx, with ciliate, lanceolate, spreading laciniae. *Nuts* two, semi-ovate, flat on the inside, convex and gibbous on the outside, two-celled, two-seeded. *Embryo* cylindric, erect? *cotyledons* parallel.

*Obs.* I have only seen the unripe fruit of this tree, the erect embryo of which seems to point it out as belonging to *Beurreria* (see Gaert. fil. carp. iii. 170. t. 212, and Brown's prodr. nov. holl. i. 497, — N. W.

#### 9. *E. umbellulata*, Wall.

Arboreous. *Leaves* ovate, sub-entire, smooth. *Umbellets* scattered, round, small, pubescent. *Corolla* rotate, with reflexed lobes, *Style* very short.

A native of Silhet, where it blossoms in March,

Beng. Kunuka.

A branchy tree. *Branches* covered with pale, ash-coloured, callos-dotted bark ; smooth, as are all the other parts.—*Leaves* alternate, ovate, repand, slightly undulate, from three to five inches long, generally with a retuse apex, perfectly smooth, acute at the base, shining above, with capillary, alternate nerves underneath, uniting in sub-marginal, elegantly reticulate arches.—*Petiol* slender, half an inch long.—*Flowers* all hermaphrodite, very small, white, fragrant, crowded together in lateral, simple or corymbose, pubescent umbels. *Pedicels* short. *Calyx* supported by an oval bracte ; lobes rounded, ciliate. *Corolla* sub-rotate, with recurved, ovate laciniae, rather

shorter than the stamens.—*Ovary* ovate, smooth. *Style* very short, fleshy; deeply and almost equally four-lobed.

*Obs.* Not having seen the fruit I am unable to decide on the true genus to which this tree belongs. It is however either an *Ehretia* or a *Beurreria*.—N. W.

### CHRYSOPHYLLUM, Schreb. gen. N. 355.

*Calyx* five-leaved. *Corol* campanulate, five-parted. (ten, Linn.) *Germ* five-celled; cells one-seeded; attachment interior. *Berry* superior, five-seeded (ten, Linn. one or ten, Gaert.) *Embryo* erect, and furnished with a perisperm.

#### 1. *C. acuminatum*, R.

*Leaves* lanceolate, acuminate, smooth. *Flowers* axillary. *Fruit* globose, five-seeded.

*Pitakara* is the vernacular name about Silhet, where the tree is indigenous, and blossoms in April. The fruit ripens in October, and is greedily eaten by the natives; though to me the taste is by no means agreeable; the pulp being almost insipid, and though tolerably firm, uncommonly clammy, adhering to the lips or knife, with great tenacity.

A middling-sized tree, with numerous slender, smooth, round branchlets.

*Leaves* alternate, short-petioled, lanceolate, entire, acuminate, polished on both sides, except while young, then clothed with ferruginous down; veins small, simple and parallel; from three to four inches long, and one and a quarter broad.—*Peduncles* axillary, several together, recurved, one-flowered.—*Flowers* minute, pale yellow.—*Calyx* five-leaved, leaflets oval.—*Corol* one-petalled. *Tube* the length of the calyx, border five-parted, segments oval.—*Filaments* five, inserted into the tube of the corol near the base. *Anthers* in the mouth of the tube.—*Germ* inferior, ovate, very hairy, five-

celled, with one ovulum in each, attached to the middle of the axis. *Style* short. *Stigma* five-lobed.—*Berries* spherical, size of a small crab-apple, smooth, when ripe yellow. *Pulp* in considerable quantity, five-celled.—*Seed* solitary, attached to the axis by the greater part of the length of the thin inner edge, smooth, polished, of a shining brown colour.—*Perisperm* conform to the seed, yellowish.—*Embryo* extended through the whole perisperm, erect. *Cotyledons* obliquely ovate, thin, three-nerved. *Radicle* curved, sub-cylindric, inferior.

*TECTONA*, Schreb. gen. N. 356.

*Calyx* five-toothed, becoming inflated over the growing pericarp. *Corol* one-petalled. *Germ* four-celled; *cell* one-seeded, attachment central. *Drupe* superior, dry, hid in the calyx. *Nut* four-seeded. *Seed* solitary. *Embryo* erect, without perisperm.

1. *T. grandis*, Willd. sp. i. 1088. Roxb. Corom. 1. N. 6.

Tekka, Rheed. mal. iv. p. 57. t. 27.

Jatus, Rumph. amb. iii. p. 34. t. 18.

Teling. Teek.

Can. Jaadi.

Beng. Sagoon, or Segoon.

This most useful tree is a native of various parts of India, viz. the mountainous parts of the Malabar and Coromandel Coasts, of the mountains bordering on the banks of the Godavuree above Rajamundri, and of Pegu. Lord Cornwallis and Colonel Kyd have some time since begun to introduce it into Bengal, where it thrives well. On this coast it flowers in June and July. The seeds ripen in September and October. In Bengal, the leaves are deciduous during the cool season; and the new foliage appears in May, a few weeks before the flowers.

*Trunk* erect, growing to an immense size. *Bark* ash-coloured and scaly. *Branches* numerous, spreading; *young shoots* four-sided,

sides channelled.—*Leaves* opposite-petioled, spreading, oval, a little scalloped, above scabrous, below covered with whitish, rather soft down, they are larger at a distance from the flowers and on young trees, viz. from twelve to twenty-four inches long, and from eight to sixteen broad.—*Petioles* short, thick, laterally compressed.—*Panicles* terminal, very large, cross-armed; divisions dichotomous, with a sessile fertile flower in each cleft; the whole covered with a hoary coloured, farinaceous substance.—*Peduncles* common, quadrangular; sides deeply channelled, angles obtuse.—*Bractes* opposite, lanceolate, two at each sub-division.—*Flowers* small, white, very numerous.—*Calyx* and *corol* as described by König, only oftener six- than five-cleft.—*Nectary* very small, frequently wanting.—*Stamens* often six.—*Germ* superior, round, hairy, four-celled, with one ovulum in each attached to the axis. *Stigma* two-cleft, divided, obtuse, spreading.—*Drupe* within the enlarged, inflated, dry calyx, obtusely four-sided, woolly, spongy, dry.—*Nut* exceedingly hard, four-celled, &c. as accurately described by Gaertner, Carp. i. 257. t. 7.

The wood of this tree, the only useful part of it, has from long experience been found to be by far the most useful timber in Asia; it is light, easily worked, and at the same time both strong and durable. That which grows on the mountains on the banks of the Godavuree, is beautifully veined, and considerably closer in the grain, and heavier than any other I have seen. It is therefore particularly fit for furniture, gun carriages, &c. For ship building it is reckoned superior to every other sort of wood; being light, strong, and very durable, either in or out of the water.

Pegu produces the largest quantity, and their large rivers enable the natives to bring it down to the sea ports from the interior mountainous parts of the country, where it grows, at a cheap rate; which enables them to sell it lower than in any other part of India:

### SIDEROXYLON, Schreb. gen. N. 357.

*Calyx* five-cleft. *Corol* rotate, five-cleft. *Nectary* five-leaved,

inserted on the fissures of the corol, alternate with the stamina. *Stigma* simple. *Berry* superior, five-seeded. *Embryo* erect.

1. *S. tomentosum*, Willd. i. p. 1090. *R. Corom. pl.* 1. N. 28.

Unarmed. *Leaves* alternate, oblong, waved, downy. *Flowers* axillary, fascicled. *Berry* with from one to five seeds.

A small tree, a native of the tops of mountains chiefly. Flowering during the hot season.

*Trunk* erect. *Bark* ash-coloured. *Branches* erect, very numerous.—*Leaves* alternate, short-petioled, oval, a little scoloped, when full grown smooth; when young covered with much rust-coloured down; from three to five inches long, and one and half broad.—*Peduncles* axillary, numerous, short, downy, bowing, undivided, one-flowered.—*Flowers* small, dull white.—*Calyx* below, five-leaved; *leaflets* imbricated, downy, permanent.—*Corol* one-petalled. *Tube* short, inside downy, margin simple, five-parted; *segments* spreading, half lanceolate, acute, waved.—*Nectary* leaflets five, alternate, with the filaments, waved, length of the stamens.—*Stamens* five.—*Germ* ovate, hid in the tube of the corol.—*Berry* ovate, size of an olive.—*Seeds* generally one or two, though there are the rudiments of five in the germ.

2. *S. grandifolium*, Wall.

*Leaves* obovate-elliptic, tapering downwards, smooth. *Flowers* globular, in numerous axillary and lateral fascicles. *Laciniae* of the *corolla* obtuse. *Ovary* densely bearded.

Grows wild in the Sîlhet district, blossoming in April; from thence communicated to me by the late Mr. Smith in 1815.

*Beng.* Khali Jamera. Aoa.

A large forest tree. *Branches* angular, tubercled from the fallen leaves, with ash-grey bark. Young branches as well as all other parts perfectly smooth.—*Leaves* scattered, approximate towards the ends of the branches, spreading, coriaceous, smooth, shining, of an elliptic-obovate form, terminated by a short acumen, gradually

tapering downwards from the outer third part, where they are as broad as a hand; acute and sub-decurrent at the base; from six to ten or twelve inches long; rib prominent underneath, and the oblique remote nerves running out to the very margin, where they unite by many capillary, sub-transversal, reticulate veins.—*Petiols* slender, an inch or an inch and a half long, flat above, the apex somewhat margined. *Stipules* none.—*Flowers* small, round, pea-green, eight or ten crowded together in very numerous fascicles; they are axillary, or lateral, small, rounded, covering almost entirely the branches under the leaves.—*Peduncles* four lines long, clavate, slightly pubescent; their bases surrounded by a number of ovate, minute, withering scales.—*Leaflets* of the calyx round, a little concave, membrane-margined and slightly ciliate, somewhat unequal in size, imbricating.—*Corolla* smooth, whitish, nearly globular, scarcely longer than the calyx, divided into five ovate, obtuse, crenulate *laciniæ*. *Stamina* shorter than the corolla.—*Filaments* ten, erect, inserted in a double row in the inside of the corolla; the lower five fertile, subulate, opposite to the *laciniæ*, with ovate, two-celled *anthers*; the uppermost five linear, whitish, sterile, inserted just below the fissures between the *laciniæ*.—*Ovary* flattish-ovate, densely bearded with short, erect, rather stiff hairs, without any surrounding disc, five-celled, five-seeded; ovula inserted on the axis. *Style* thick, columnar, as long as the corolla. *Stigma* truncate.—*Fruit* not seen.

*Obs.* The anatomy of its flowers agrees so well in the essential parts with that of *S. inermis*, L., introduced by my excellent friend Dugald Carmichael, Esq. (late Capt. H. M. 72d Regiment) into the botanic garden at Calcutta, that I prefer placing it here instead of referring it to *Bumelia*, Sw. or *Sersalisia*, Br. until an examination of the fruit shall enable me to decide the point.—N. W.

### RHAMNUS, Schreb. gen. N. 358.

*Calyx* five-parted. *Corol* five-petalled. *Germ* sunk in the saucer-shaped nectary; from two to three-celled; cells one-seeded; attach-



ment inferior. *Berry* superior, from one to three-seeded. *Embryo* erect; perisperm scanty.

1. *R. incanus, R.*

Unarmed, odorous. *Leaves* ovate-lanceolate, entire, smooth above, hoary underneath. *Stipules* filiform. *Corymbs* on small axillary branchlets. *Style* three-cleft.

Reared in the botanic garden at Calcutta from seed received from the Moluccas. Flowering time the cold season.

*Trunk* straight. *Branches* numerous, nearly horizontal. *Branchlets* alternate, bifarious. *Bark* smooth; that of the woody parts ash-coloured, that of the young shoots green.—*Leaves* alternate, bifarious, petioled, ovate-lanceolate, entire, smooth above, very white underneath; length from two to twelve inches, and from one to five broad.—*Stipules* filiform.—*Corymbs* alternate, on small, sub-erect, axillary branchlets.—*Flowers* very numerous, small, greenish yellow.—*Calyx* villous on the outside, and keeled on the inside.—*Corol* petals (scarlets, Linn.) cuneate, concave.—*Style* three-cleft.—*Berries* round, smooth, united to, and resting on the remaining calyx, the size of a small cherry, when ripe black, and filled round the seeds with a dry mealy substance.—*Seeds* three when all come to perfection, which is seldom the case, slightly united.

2. *R. circumscissus, Willd. sp. i. 1001.\**

Shrubby, armed with sub-opposite recurved prickles. *Leaves* sub-opposite, round-obcordate, dentate, polished. *Umbellets* axillary.

*Sung.* भूवदरो, Bhoovuduree, क्षितिवदरो, Kshitivuduree, वल्ली वदरो, Vulleevuduree, वदरवल्ली, Vuduruvullee, वडफलिक्का, Bu-loophulika, लघुवदरो, Lughovuduree, वदरफलो, Vuduruphulee, सूक्ष्मवदरो, Sookshmiuvuduree.

A native of the forests of India, where its long straggling branches

\* *Ceanothus*, Gaertn. carp. i. 110. t. 106.

armed with the most acute, strong, recurved thorns give the most cautious travellers infinite pain and trouble. Flowering season the months of January, February, and March; the seeds take nearly a year to ripen.

*Trunk* short, soon dividing into many, long, straggling, scandent branches; with numerous, diverging, alternate, round, smooth, armed branchlets.—*Spines* on the lateral branches axillary, solitary, rather longer than the petioles, coloured, very sharp, and a little recurved; the leading shoots are unarmed.—*Leaves* sub-opposite, short-petioled, round-cordate, dentate, firm and polished on both sides; about three-quarters of an inch each way.—*Stipules* small, caducous.—*Umbellets* axillary, solitary, very small, from ten- to twelve-flowered, the floriferous axils bear no thorns.—*Calyx* globe-campanulate, five-toothed.—*Petals* or *scales* crescent-shaped.—*Germ* ovate. *Style* scarcely any. *Stigma* somewhat two-lobed.—*Berry* a little depressed and umbilicate, smooth, the size of a marrowfat pea, having the base covered by the remaining calyx.—*Seeds* five when all come to maturity.

### 3. *R. virgatus*, R.

Shrubby, erect, spines terminal. *Leaves* oblong-ventricose, serrate. *Flowers* round the base of the young shoots and axillary, tern; corol four-cleft. *Stigma* two or three-cleft.

A native of Nipal, from thence Dr. Buchanan sent seeds to the botanic garden at Calcutta in 1802, where the plants grow freely to the size of a very large shrub; they blossom in March, and ripen their seed in October and November.

*Trunk* not very short, distinct from the branches, all are erect dividing and sub-dividing into long, terminal, straight, unarmed twigs, and short, rigid, lateral spinous pointed branchlets, bark of the old woody parts beautifully variegated with ash-colour and brown, that of the young shoots smooth and green.—*Leaves* alternate, rarely sub-opposite, short-petioled, reclinate, oblong-ventricose, serrate, pretty smooth on both sides; from one to three inches long,

and from half an inch to an inch broad.—*Stipules* petiolar, ensiform, ciliate, base permanent.—*Peduncles* from the scales which embrace the base of the young shoots, and axillary, generally tern, slender, one-flowered.—*Flowers* very small, yellow.—*Calyx* campanulate, more generally four- than five-cleft.—*Corol* no other than the little scales of the genus, which are here very imperfect.—*Filaments* four or five, as there are divisions in the border of the calyx, small. *Anthers* often imperfect.—*Germ* two or three-lobed, ovate, smooth, from two to three-celled, with one *ovulum* in each, attached to the lower and inner angle of its cell. *Style* short. *Stigma* two- or three-cleft; segments recurvate.

It differs from *R. catharticus*; the only species known to me which it approaches, in having a two- or three-cleft stigma, with just as many lobes, cells, and seeds as in the germ, consequently the number of seeds in the berry can never exceed the contents of the germ, it cannot therefore be catharticus, which has a four-cleft stigma, and four-seeded berry.

*Obs. by N. W.*

This is among the more common trees in Nipal where I have found it both on mountains and in valleys. It flowers in April and May, and ripens its fruit in July.

It grows to be a middling size, and is copiously furnished with rigid branches; which are opposite while young, ending in a round, slender spine. The bark is pretty even, covered with a shining silvery epidermis, which separates here and there. The leaves appear fascicled when they first shoot out, which happens when the tree is in blossom; afterwards they become remote, and are generally sub-opposite; their form is lanceolate, tapering at both ends, acuminate; the serratures terminated by a small glandular withering point, becoming soon obtuse; nerves alternating, very oblique, reticulate towards the margin; their axils slightly depressed and villous underneath; veins numerous, transversely reticulate, inconspicuous.—*Petiol* pubescent, channelled, slender, half an inch long.—*Stipules* oppo-

site, ciliate, acute.—*Fascicles* shorter than the petals of the full grown leaves. *Flowers* greenish, always hermaphrodite and four-cleft in their wild state. *Petals* almost capillary, measuring scarcely half the length of the laciniae of the calyx.—*Stamina* a little longer than the petals.—*Style* cleft in two to the middle. *Stigmas* convex,—*Berry* from two to three-celled, two or three-seeded, of a purple colour, supported by the small truncate calyx, resembling in every respect the common Buckthorn (*Rh. catharticus*.)

It is certainly very much like the last mentioned species, nor perhaps to be separated except on account of its greater size, its more acuminate leaves, and the invariably united flowers. The wood is very hard and heavy, of a chocolate colour towards the centre; I am not aware that it is prized by the inhabitants of Nipal, nor does the size of the stem, which scarcely ever exceeds six inches in diameter, admit of its being employed to any considerable extent in carpentry.—N, W.

#### 4. *R. lucidus*, R.

Sub-arboreous, armed with short, opposite and solitary, recurved aculei. *Leaves* opposite, from round to oblong, emarginate, entire, polished and firm. *Peduncles* axillary, short, from two to four-flowered. *Berries* globular, generally two-seeded.

A small, very ramous tree, with far spreading and straggling, somewhat scandent branches; a native of the *Mauritius*. It is very nearly allied to *R. circumscissus*, the chief difference is in the leaves being entire and retuse, or emarginate in this species.

### ZIZIPHUS, Lamarck.

*Calyx* five-parted. *Corol* five-petalled. *Germ* hid in a crenulate, flat nectary, from two to three-celled; cells one-seeded; attachment inferior. *Drupe* superior, nut from one to three, or more, one-seeded. *Embryo* erect, with scanty perisperm, or none.

1. *Z. trinervia*, R.

Arboreous, unarmed. *Leaves* ovate-oblong, three-nerved, obtuse-ly serrate, glossy. *Flowers* in axillary fascicles. *Stigma* two-cleft. *Drupe* spherical.

A native of Mysore; from whence Dr. Buchanan sent seeds to the botanic garden at Calcutta in 1800, and in eight years the plants therefrom have grown to be beautiful small trees, of about twenty feet in height, with innumerable branches and branchlets spreading in every directions, with extremities often pendulous, and crowded with beautiful, dark green, glossy foliage. Flowering time in the botanic garden March and April, the fruit ripens in September, October, and November.

*Leaves* alternate, bifarious, short-petioled, broad-lanceolate, or ovate-oblong, obtuse, strongly marked with three nerves, smooth, firm and glossy, obtusely serrulate, from one to five inches long, and from one to two and a half broad.—*Stipules* filiform, caducous.—*Flowers* numerous, small, greenish yellow, collected in little axillary fascicles.—*Scales* of the corol small, and shorter than the recurved stamens.—*Germ* ovate, immersed in the large, convex, fleshy receptacle, two-celled, with one *ovulum* in each, attached from the base to the bottom of the partition. *Style* scarcely any. *Stigma* two-cleft, divisions short and recurved.—*Drupe* spherical, the size of a cherry, polished, of a lively yellow, one-celled. *Pulp* soft, gelatinous and sweet. *Nut* obovate, considerably flattened, a little rugose, one- or two-celled.—*Seed* conform to the cell, of a brownish colour, and rather soft.—*Embryo* nearly as long, and broad as the perisperm, and of the same colour, erect. *Cotyledons* two, nearly orbicular. *Radicle* obovate, inferior.

## Obs. by N. W.

This is the same as *Z. trinervia* var. *glabrata*, Roth. nov spec, 159 (*Z. sororia*, syst. veg. v. 337,) as I have ascertained by comparison of the specimens preserved in the late Dr. Heyne's collection

with those of the botanic garden of Calcutta. It must not be confounded with *Z. trinervia*, Poiret. (*Rhamnus*, Cavan.)—N. W.

2. *Z. albens*, R.

Arboreous. *Prickles* solitary, recurved. *Leaves* obliquely oval, serrulate, downy underneath. *Corymbs* axillary, long-peduncled. *Corol* none. *Style* two-cleft. *Drupe*s drooping, smooth, white.

Found by Dr. Hunter in Col. Palmer's garden, near Calcutta, in full flower, and with ripe fruit in April 1803. It was originally brought from China.

*Trunk* arboreous, with spreading branches.—*Prickles* solitary on the underside, short, recurved, being nothing more than the indurated stipules.—*Leaves* alternate, bifarious, short-petioled, three-nerved, obliquely oval, most slightly serrulate, downy underneath.—*Stipules* subulate, the lower one hardens into a prickle, the other is caducous.—*Peduncles* axillary, solitary, three or four times longer than the petioles, many-flowered.—*Calyx* five-cleft.—*Corol* none, nor any thing like the usual scales of the genus.—*Style* two-cleft.—*Drupe* round, the size of a small cherry, smooth, when ripe white, and pendulous. The pulp rather mealy and sweet. *Nut* turbinate, thin, two-celled, with a single seed in each.

3. *Z. latifolia*, R.

Arboreous, prickles stipulary, short, and recurved. *Leaves* oval, serrate, three-nerved, downy underneath. *Panicles* terminal. *Petals* wanting. *Drupe* turbinate. *Nut* one-celled.

This species is very rare. It is a native of mountainous tracts in the Circars and grows to be a small tree.

*Prickles* solitary, very thick, but short, recurved, a rigid pointed thorn-like stipule occupies the other side of the insertion of the petiole.—*Leaves* alternate, short-petioled, bifarious, oval, serrate, three-nerved, smooth, from four to six inches long.—*Corymbs* terminal, and from the exterior axils, forming a large oblong panicle.—*Corol*

none.—*Nectary* as in the other species.—*Anthers* three-lobed.—*Germ* two-celled, one *ovulum* in each, attached to the bottom of the cell.—*Drupe* turbinate, size of a cherry, yellow.—*Nut* generally one-celled.

*Obs. by N. W.*

I have found this tree in Nipal, at least one so closely allied to those in the botanic garden that I dare not separate them. It is rather rare in the vicinity of the valley, blossoming during the summer and ripening its fruits towards the end of the rains; it is also found at Noakote; and I have had specimens of it from Silhet under the name of *Enoree* (ইনোরী).—Roths *Z. obliqua*, nov. spec. 160 is this very species, as I have ascertained from specimens in Dr. Heyne's collection; and *Z. paniculata* of that work (p. 161) scarcely differs from either. The following description is taken from the tree of Nipal. It grows to the height of twelve to sixteen feet, with irregular *trunk*; crooked, spreading *branches*, and rough ash-coloured *bark*.—All the young parts are most abundantly clothed with rust-coloured, soft tomentum; the new shoots surrounded at the base with some persistent bud-scales. *Prickles* short, robust, slightly recurved.—*Leaves* of the old branches very large, their sides and base very unequal, apex rounded, mostly acute; many-nerved, there being generally several lateral nerves besides the principal three; while young they are densely covered with ferruginous soft tomentum. *Petiols* short, villous. *Panicles* lateral and terminal on the naked branches, loose, ramous, generally two or three together. *Peduncles* flexuose. *Flowers* crowded, sessile, in geminate umbellets. *Calyx* cup-shaped, smooth within, as well as the pedicels yellowish; *lacinia* lanceolate, acute. *Corol* absolutely none.—*Ovary* two-celled, two-seeded, half plunged into a fleshy, five-pitted, five-lobed, yellow disc; *style* smooth, deeply bifid, scarcely equalling the stamina in length. *Drupe* as large as a small filbert, round-obovate, supported by the narrow remainder of the bottom of the calyx, one-celled, one-seeded; it is eaten by the natives.—N. W.

4. *Z. Jujuba*, Willd. sp. i. 1104.

Arboreous. Leaves obliquely-ovate, serrate. Peduncles axillary, many-flowered. Thorns stipulary, one recurved, the other straight. Nuts two-celled.

*Perim Toddali*, Rheed. mal. iv. 85. t. 41.

*Malum indicum*, Rumph. amb. ii. 117. t. 56.

Sung. कर्कन्धूः, Kurkundhoo, कर्कन्धुः, Kurkundhoo, वदरी, Vudree, वदरः, Vudura, कोलिः, Koli, कोलः, Kola, कोलो, Kolee, फेनिलः, Phenila, सौवीरकः, Souveeruka, गुडफल, Gooduphula, बालेष्टः, Balēsta, फलशैशिरः, Phulushishira, द्रिह्वोजः, Drirhuvēja, वृन्तफलः, Vrintuphula, कण्टकी, Kuntukee, वक्रकण्टकः, Vukrukuntuka, सुवीरः, Sooveera, सुफलः, Soophula, खच्छः, Swuchha, अजाप्रिया, Ujapriya, कुहा, Kooha, विष्मा, Vishuma, उभयकण्टकः Oobhuyakuntuka.

Beng. Kool.

Hind. Bier.

Telinga. Rengha.

On the coast of Coromandel this grows to be a small tree.\* Flowering time the rainy season; the fruit ripens after the rains.

Trunk seldom straight, yet not much bent. Bark scabrous, much and deeply cracked. Branches spreading in every direction; branchlets bifarious, flexuose; young parts a little downy.—Thorns stipulary, very sharp; the under one recurved, the upper one straight.—Leaves short-petioled, alternate, bifarious, obliquely-oval, serrate, with the apex often three-toothed, above smooth, below downy; from one to two inches long.—Flowers axillary, crowded on sub-sessile umbellets.—Calyx one-leaved, spreading, five-parted, divisions acute.—Petals (scales of Linn.) five, wedge-shaped, apex large, concave, spoon-like, with its margin slightly crenulate; they are inserted on the inside of the divisions of the calyx.—Nectary saucer-shaped, perforated for the pistillum, margin ten-notched.—Filaments

\* In Bengal it is very common also.—N. W.



five, rather shorter than the petals, and inserted immediately over them, so that the small oval anthers rest in their concave apices.—*Germ* above. *Style* two-cleft; *divisions* recurved. *Drupe* globular, size of a large cherry, smooth, yellow when ripe.—*Nut* rough, two-celled.—*Seed* solitary, affixed at the base.

The fruit is eaten by all classes of persons.

*Obs. by the Editor.*

There is a variety of this species, or perhaps a distinct species, which produces an excellent fruit of a long form, about the size of a hen's egg, to which the following Sungskrit names belong.

राजवदरः, Rajuvudura, नृपेरुः, Nripesta, राजवल्कलः, Rajuvallubha, नृपवदरः, Nripuvudura, एधुकोलः, Priihookola, तनुबीजः, Tanooveeja, मधुरफलः, Mudhooraphula, राजकोलः, Rajakola.

Beng. Narikelec Kool.—*Ed.*

5. *Z. vulgaris*, Willd. sp. i. 1105.

*Leaves* obliquely oval, serrulate, three-nerved, hoary underneath; *Thorns* stipulary, one straight, the other recurved. *Drupe* oblong. *Nuts* sharp-pointed, two-celled.

*Z. sativa*, Gaert. i. p. 202. t. 43. f. 4.

A pretty large tree, often as large as full grown apple tree in England, a native of Persia, and Hindoosthan; only found in gardens in Bengal, where it blossoms in August, and the fruit ripens in January.

6. *Z. nitida*, R.

Arboreous. *Thorns* stipulary, one projecting, one recurved. *Leaves* obliquely ovate-oblong, three-nerved, obtusely serrate, smooth. *Fruits* sub-cylindric; *nuts* two-celled.

Introduced from China into the botanic garden at Calcutta, where it grows to be a small tree. Flowering time the hot season.

*Root* superficial, sending up many suckers for some yards round the tree.—*Trunk* generally crooked. *Bark* brown, pretty smooth; branches few, flexuose, and thin of leaves.—*Spines* stipulary, the upper one straight, long, and pointing much forward, the other shorter and recurved.—*Leaves* alternate, short-petioled, obliquely oblong, emarginate, three-nerved, serrate, smooth, of a shining green on both sides, from one to two inches long.—*Flowers* axillary, few, collected on short common peduncles; they are small, yellow, semi-digynous.—*Drupe* oblong, pendulous and smooth, about an inch long, when ripe pale-yellow. *Nut* lanceolate, pointed at both ends, a little compressed, rugose, two-celled.

The fruits are eaten, but to my taste they are rather insipid. Innumerable suckers constantly rise from the root which run to a great distance from the parent tree, and make it a troublesome plant in a garden, but at the same time they render it easily propagated, if necessary.

7. *Z. Lotus*, *Lamarck encyclop.* iii. 304. *Illustr.* 1. 185. f. 2.

Arboreous; *spines* stipulary, one long, slender, and straight, the other recurved. *Leaves* oval, three-nerved, most slightly crenulate-serrate, smooth on both sides. *Flowers* axillary, style two-cleft.

*Z. Lotus*, *Willd.* i. 1103.

A native of Persia, &c.; blossoms in the hot season in the botanic garden at Calcutta. It is readily known from its Indian congeners by the whiteness of its bark, and the pale-yellow tinge of its long and very slender prickles.

8. *Z. elliptica*, *R.*

Arboreous. *Thorns* paired, the upper one rather incurved, the under one recurved. *Leaves* elliptically oval, serrulate, three-nerved, pale underneath. *Corymbs* axillary, dichotomous. *Flowers* semi-trigynous.

A stout straight tree, a native of Tranvancore, from thence intro-

duced by Dr. A. Berry, into the botanic garden at Calcutta, where it blossoms in May and June.

*Trunk* straight, but slightly bent to one side, covered with pretty smooth, brown bark. *Branches* and *branchlets* numerous, spreading much while young, and divaricated when old. *Young shoots* slightly villous, and flexuose.—*Prickles* paired and stipulary; the upper one straighter and pointing forward; the under one much recurved. *Leaves* alternate, bifarious, short-petioled, elliptically oval with the base obliquely cordate, finely serrulate, three-nerved, smooth above, pale and soft underneath, from one to two inches long.—*Stipules* subulate, soon becoming the sharp thorns above described.—*Corymbs* axillary, much shorter than the leaves, several times dichotomous, villous, many-flowered.—*Calyx*, *corol*, and *stamina*, as in the genus.—*Germ* ovate, immersed in the receptacle, three-celled, with one *ovulum* in each, attached to the bottom of the cell. *Style* short, three-cleft.

9. *Z. Oenoplia*, Willd. i. 1105.

Shrubby. *Thorns* solitary, recurved. *Leaves* unequally ovate-cordate, entire, acute; three-nerved, downy underneath. *Flowers* minute, crowded in the axils.

Native of various parts of India. Flowering time the close of the rains.

10. *Z. tomentosa*, R.

Shrubby. *Thorns* solitary, scarcely curved. *Leaves* unequally ovate-cordate, three-nerved, obtuse, minutely serrulate, hairy above, and tomentose underneath. *Panicles* lateral.

A short, very ramous shrub, a native of Chittagong, and there used for fences.

11. *Z. xylopyrus*, Willd. spec. i. 1104.

Arboreous. *Leaves* obliquely cordate, three-nerved, serrate, downy. *Thorns* when present stipulary, one recurved, the other straight. *Nuts* three-celled, three-valved.

*Rhamnus Xylopyrus*, Retz. obs. ii. 11.

*Telinga. Goti.*

Common in every forest on the coast of Coromandel.

In a good soil it grows to be a pretty large tree, with a tolerably erect trunk, but in general it is found in the state of a large straggling shrub. *Bark* light ash-coloured, much cracked, corky; young parts covered with soft white down.—The *prickles* in a poor soil are always present and stipulary, the under one recurved, the upper one erect and straight.—*Leaves* alternate, short-petioled, bifarious, obliquely-cordate, serrate, three-nerved, downy, particularly on the under side, about two inches long.—*Corymbs* axillary, small, many-flowered. *Flowers* as in the genus.—*Style* three-cleft.—*Drupe* the size of a large cherry, greenish and downy, marked round the base with the remains of the nectary. *Nut* three-celled, three-valved, the valves separating when the nut has been sometime exposed to the weather, leaving a central three-sided receptacle.—*Seeds* one in each cell, orbicular, compressed, affixed at the base to the receptacle.

Cattle eat the leaves, young shoots, and fruit. The kernels taste like filberts, and are eaten by the Natives.

The wood of the largest trees is much esteemed by the natives; being yellowish or orange-coloured, very hard and durable, and at the same time not very heavy.

## 12. *Z. Caracutta*, Buch.

Arboreous. *Thorns* in pairs; the under one recurved, the upper one straight. *Leaves* round, serrulate, three-nerved. *Peduncles* axillary, very short, many-flowered. *Style* three-cleft. *Drupe* oval, with a three-celled nut.

A native of the Southern parts of Mysore, and there known to the natives by the name *Karakutta*. Seeds sent from thence by Dr. Buchanan to the botanic garden at Calcutta produced plants, which in four years were about ten feet high, with a tolerably erect, stout trunk, and many spreading, crooked branches; covered with smooth,

dark ash-coloured bark. The young shoots are round, and villous. They blossom in April, and the fruit ripens in December.

*Thorns* in stipulary pairs, the lower one recurved, the upper one straight, both are hard, smooth, and acute; where the flowers are, the thorns are generally deficient.—*Leaves* short-petioled, obliquely round-cordate, or nearly round, obtuse, or retuse, serrulate, three-nerved; while young somewhat villous; from one to two inches long, and nearly as broad.—*Peduncles* axillary, very short, bearing many small, short-pedicelled, greenish-yellow flowers.—*Style* three-cleft.—*Drupe* the size of a large cherry, oval, depressed a little at both ends, smooth, dark-brown; fleshy part tough, firm, and yellowish. *Nut* roundish, a little uneven on the outside, very hard and thick, three-celled.—*Seeds* solitary, attached to the bottom of the cell, nearly round, compressed, convex on the inside. *Integuments* two; the exterior firm, light brown, and polished; the inner thin and softer. *Perisperm*; when the seed is ripe, there is only on each side of the embryo a white, fleshy lamina; but at this period not connected round its margins, as before maturity. *Embryo* erect; *cotyledons* two, nearly five-nerved. *Radicle* inferior, oval, just within the umbilicus.

### 13. *Z. microphylla*, R.

Shrubby; *branchlets* bifarious, flexuose. *Thorns* stipulary, one straight, the other recurved. *Leaves* ovate, three-nerved, serrulate, woolly underneath. *Flowers* fascicled. *Stigma* two-cleft.

*Jujubas zizyphus zeylanica*, Pluck. Alm. 199. t. 197. f. 2.

*Rhamnus nummularia*, Burm. ind. 61.

Common on barren uncultivated lands on the Coromandel coast. Flowering time the beginning of the rainy season.

*Stem* scarcely any, but many slender, rigid, bifarious, flexuose branches spreading in all directions, and forming a small bush. *Bark* covered with a light-coloured, almost white pellicle.—*Thorns* stipulary, the upper one straight, slender, but very sharp, and as long as the leaves. The under one shorter, and much recurved.—*Leaves* alternate, bifarious, very short-petioled, ovate and oval, serrulate, above

pretty smooth, woolly underneath; about half an inch long.—*Flowers* collected in the axils of the leaves, short-peduncled.—*Calyx* tomentose on the outside.—*Petals* short-clawed, oval.—*Stigma* two-cleft;

14. *Z. Napeca*, Willd. spec. i. 1104.

Shrubby, climbing. *Leaves* obliquely cordate, serrate, three-nerved, downy underneath. *Thorns* stipulary. *Nuts* two-celled.

*Sung.* सूक्ष्मफलः, Sookshmaphala, बूहुकण्टकः, Buhookantuka, सूक्ष्मपत्रकः, Sookshmuputruka, दुस्पर्श, Doospursha, मधुरः, Muthoorā, श्वराहारः, Shuvurahara, शिखिप्रिया, Shikhipriya, कर्कशुः, Kurkundhoo, शृगालकोलिः, Shrigalakoli.

*Beng.* Shes-kool.

*Telinga.* Paramie.

This is the most common species of the genus; it is to be found in every hedge throughout India, and always with scarcely any thing that can be called a trunk, but many large, straggling, climbing branches, which are too weak to support themselves. *Bark* dark, rust-coloured, pretty smooth; young shoots downy.—*Prickles* always present, stipulary, large, and exceedingly sharp; the lower one is much recurved, the upper one straight.—*Leaves* alternate, short-petioled, bifarious, very obliquely ovate, serrate, three-nerved; downy underneath, from one to two inches long.—*Corymbs* axillary, many-flowered.—*Style* two-cleft.—*Drupe* the size of a pea, smooth, shining black, marked round the base with a circular scar. *Nut* rugose, obcordate, two-celled; generally one of the cells is obliterated, or abortive.—*Seed* solitary, affixed to the bottom of the cell.

The fruit is eaten by the natives; the taste a very pleasant acid. A decoction of the bark of the fresh root is said to promote the healing of fresh wounds.

*Obs. by N. W.*

I have found this in flower and fruit in Prince of Wales's island in August. At Silhet it is common.—N. W.

15. *Z. glabra*, R.

Shrubby, scandent, smooth. *Thorns* solitary, recurved. *Leaves* ovate-cordate, long, obtuse, pointed, serrulate, smooth, strongly marked with three nerves. *Drupes* oval.

A native of Chittagong, where it flowers in the cool season, and the fruit, which is about the size of a gooseberry, ripens in May.

16. *Z. incurva*, R.

Arboreous. *Thorns* paired, one straight and patent, the other incurved. *Leaves* ovate-oblong, polished, three-nerved, serrulate; obtusely acuminate. *Peduncles* axillary, few- or many-flowered; *flowers* semi-digynous.

A native of Nipal, from thence introduced by Dr. Buchanan into the botanic garden at Calcutta, in 1802, where in ten years they had grown to be slender trees, of about fifteen feet in height, with innumerable well armed branches, and smooth branchlets spreading in every direction. Flowering time the rainy season.

*Obs. by N. W.*

I have found this species on various mountains surrounding the valley of Nipal, also in some of the less elevated forests (Pooshpa-nath, Gokarna, &c.) It blossoms in April and May, and ripens its fruit in July.

Native name, Kookusee.

It is a small tree with smooth ash-coloured bark. *Branches* dotted; it is only in particular situations that they become thorny, for in general they are unarmed; when young pubescent. *Leaves* ovate-lanceolate, three or four inches long, serrulate, acuminate; with unequal sides, and acute or rounded base; leathery, smooth, shining, obscurely five-nerved, the intermediate three nerves being strong and pubescent, the lateral ones short and inconspicuous. *Petiol* half an inch long, pubescent. *Stipules* linear, villous, very deciduous.—*Corymbs* small, axillary, pubescent, on a peduncle which is generally a little longer than the petiol and bifid at the apex.

*Flowers* greenish. *Petals* very small, reflexed between the laciniae of the calyx. *Ovary* two-celled, two-seeded, surrounded by a lobed and waved disc. *Style* deeply two-cleft.—*Drupe* small, round, dark purple, with a two-celled nut.—N. W.

*Additional species by N. W.*

17. *Z. flexuosa*, Wall.

Shrubby, smooth, with spinous flexuose branches and unarmed straight branchlets. *Spines* unequal, one very long and straight, the other recurved. *Leaves* lanceolate, obtuse, crenate. *Flowers* axillary, sub-solitary.

A native of Gosain-Than in the Himalaya, and from thence introduced into the garden of my inestimable friend the Hon. Edward Gardner, resident at the court of the Raja of Nipal, with whom I had the happiness of living for nearly twelve months in that glorious country, and to whose unbounded kindness and indefatigable co-operation I am indebted for whatever success may have attended my researches there.—Time of blossoming May.

It is a large, elegant, branchy, smooth shrub. *Branches* slender, round, dotted, flexuose, spinous; while young they are unarmed, purplish and straight.—*Thorns* geminate under the ramifications and at each bend of the branches, unequal, smooth, shining, brown mahogany coloured; one of them short and recurved, the other straight, slender, about an inch long.—*Leaves* approximate, sub-bifariouly alternate, lanceolate, obtuse or retuse with a small point, unequally crenate, an inch or two long, smooth, shining, three-nerved, reticulate.—*Petiol* very short.—*Stipules* unequal, linear, rather pungent, enlarging and becoming spines by age.—*Flowers* axillary, solitary, or few-fascicled, yellowish, rather large, on short pedicels, which have a few minute scales at their base.—*Calyx* flat, spreading: *laciniae* ovate, acute, one-nerved on their upper surface. *Petals* minute, spoon-shaped, with long claws, and rounded apex, spreading, and at length reflexed together with the stamens.—*Ovary*



minute, ovate, immersed in a flat lobed disc. *Style* deeply bifid.  
—N. W.

18. *Z. calophylla*, Wall.

Shrubby, climbing, armed with solitary, short recurved prickles. *Leaves* ovate-oblong, smooth, glossy, three-nerved, veinless, minutely crenulate. *Corymbs* terminal, paniced.

Discovered on the hills of Pulo Pinang by Mr. George Porter; in flower in January.

An extensive, scandent, smooth shrub, with slender, round branches, armed with small, solitary, recurved prickles; while young slightly pubescent.—*Leaves* sub-bifariouly alternate, ovate-oblong, ending in a short, linear, blunt acumen; base acute; margins minutely serrulate; they are extremely beautiful, of a coriaceous structure, perfectly smooth, glossy and shining above, with three elevated nerves underneath, which run from the base to the very apex, perfectly veinless except when dry, or held towards the light: they then appear elegantly marked with innumerable transversal, approximate, capillary veins; their length from three to five inches; while very young pubescent. *Petiol* half an inch long, channelled. *Stipules* linear, one of them quickly deciduous, the other persistent, becoming recurved and enlarging into a prickle. *Flowers* villous, disposed in terminal, paniced, pubescent *corymbs*.—*Lacinia* of the *calyx* broad-ovate, one-nerved above. *Limb* of the *petals* ovate, concave. *Style* bifid.—N. W.

19. *Z. elegans*, Wall.

Shrubby, erect, nearly unarmed, with filiform, pubescent branches, and bifarious, lanceolate, serrulate, bluntly acuminate leaves, which are smooth above, and pubescent underneath.

I found this most elegant shrub, which has decidedly the habit and leaves of a *Zizyphus*, on Singapore, without flowers or fruit in October.

*Branches* extremely slender, almost filiform, pubescent, armed with very small, deciduous prickles; bark of the older ones soft,

spongy, ferruginous.—*Leaves* approximate, bifarious, lanceolate, one or two inches long, tapering into a linear, blunt acumen, rounded and unequal at the base, margins most minutely serrulate from the very base to the apex, smooth and shining above, with three pubescent nerves underneath, veinless except when dry. *Petiol* short, villous, *Stipules* minute.—N. W.

20. *Z. flavescens*, Wall.

Unarmed, smooth, climbing. *Leaves* oblong-ovate, equal, acute, glaucous, most entire, with many undivided, parallel ribs underneath. *Racemes* terminal, simple. *Flowers* fascicled.

A native of the elevated regions about Gosain-Than, from whence my people brought me specimens in flower in July.

A climbing, smooth, unarmed, ramous shrub. *Branches* round, rather slender, brownish, polished.—*Buds* axillary, oblong, small, acute.—*Leaves* remotish, alternate, of a very regular oblong-ovate form, ending in a sharp point, rounded at the base, sides equal and perfectly entire; bright green, opaque, and obliquely furrowed above; glaucous, at length yellowish underneath, with elevated rib and very numerous, approximate, undivided, parallel, oblique, filiform nerves, running out to the very margin, the lowermost opposite; and with capillary, transversal, reticulate veins; from three to five inches long.—*Petiol* very slender, about an inch long. *Stipules* single, intra-axillary, erect, adpressed, with bifid, acute apex, two-keeled, longitudinally concave or depressed back and gibbous base, inserted on the base of the petiol in the axil, withering, about three lines long.—*Racemes* terminal on the branchlets, simple, about two inches long, sessile, oblong, composed of several short-pedicelled fascicles of small, nodding, unilateral, greenish flowers.—*Peduncles* about one-third of an inch long, with a minute fleshy bractlet at the base.—*Calyx* turbinate, deeply divided into five triangular, acute, slightly dotted *laciniæ*.—*Petals* five, white, oblong, squamiform, sessile between the segments of the calyx and rather shorter than they, vaulted, opposite to the stamina and embracing

them. *Filaments* subulate; *anthers* erect.—*Ovary* oblong, immersed in a flattish, five-lobed, fleshy *disc*; two-celled, two-seeded: *ovula* erect. *Style* short, fleshy, two-lobed: each lobe slightly bifid, so as to make the style appear four-lobed.—*Stigmas* convex.

*Obs.* This and the two following species partake much of the habit and character of *Ceanothus* and *Pomaderris*, and may perhaps with *Z. volubilis*, Linn. and a few others which, like them, have *alternately-ribbed equal* leaves, be conveniently removed from this genus. I have only observed the fruit of one of them, *Z. floribunda* (and that in a not quite ripe state) which is decidedly that of a *Zizyphus*.—The leaves of this species acquire a yellowish tint on getting dry, like some of our East Indian *Symploci*.—N. W.

### 21. *Z. floribunda*, Walt.

Unarmed, smooth, with rambling *branches*. *Leaves* ovate, acute, perfectly entire, retuse at the base, glaucous and parallel-ribbed underneath. *Panicle* very large, terminal. *Flowers* racemose. *Drupe* sub-cylindric.

I have found it at Sankoo and Thankote in the valley of Nipal, and on Chundrugiri, blossoming from May to August; fruit ripening in three months.—Mr. De Silva has also sent me flowering specimens from the Pundooa hills gathered in the month of July.

*Juyunta* name, Aromacha-Lamba (आरोमाचा लान्वा.)

A very large, smooth shrub, which is erect or climbing according to circumstances; with very long and slender, cylindric *branches*, covered with shining green bark; glaucous while young.—*Leaves* alternate, spreading, ovate, tapering, acute, or sub-acuminate, most entire, with somewhat waved and repand margins and rounded or slightly retuse base, coriaceous, dark green, shining and obliquely furrowed above; glaucous underneath, with numerous approximate, parallel, oblique, mostly opposite, simple nerves, and transversal capillary veins; from three to five inches long.—*Petiole* an inch long, slender, channelled, bearing at the base an intra-axillary *stipule* exactly as in the preceding species.—*Panicle* terminal, oblong, attenuate,

sessile, nodding with the end of the branch, from six to twelve inches long, with alternate branches, divided into numerous, slender, from two to three inches long, cylindric racemes of very small, white, fascicled smooth flowers, on very short capillary pedicels.—*Common peduncle* smooth, slightly flexuose; *partial* ones pubescent.—There is a small pubescent, deciduous bracte under each sub-division of the peduncles.—*Laciniae* of the *calyx* lanceolate, acute, with an elevated longitudinal line above.—*Petals* five, spathulate, cowed, minutely crispate, opposite to and involving the stamina, sessile, shorter than the calyx. *Ovary* extremely small, immersed in the centre of a flat, smooth, yellow, fleshy disc. *Style* very short, columnar, somewhat fleshy. *Stigma* convex, two-lobed.—*Drupe*s very numerous, densely racemose, sub-cylindric, pointed with the permanent style, supported at the base by the small persistent bottom of the calyx and the withered disc, of a purple colour, smooth, about two-thirds of an inch long, containing a bony, two-celled nut.—N. W.

## 22. *Z. hamosa*, Wall.

Climbing, with opposite branches and alternate, reflexed, slightly curved thorns. *Leaves* sub-opposite, oblong, acuminate, serrulate, ribbed: the axils of the nerves villous. *Flowers* fascicled, in villous, short-panicled, terminal racemes.

An inhabitant of Chundrugiri in Nipal where it climbs upon trees and shrubs to a great extent, flowering in the month of August.

This is likewise a very large, rambling and climbing, ramous shrub. *Branches* round, long, opposite, or alternate, in which case a spine generally occupies the place of the branch which is wanting, covered with smooth greyish bark; while young brownish, obscurely four-cornered, a little dotted and pubescent.—*Spines* remote, strong, sub-cylindric, sharp-pointed, an inch or an inch and a half long, reflexed so as to form an acute angle below with the branch, gently curved toward their apex; on older branches, as also on the stem they are generally wanting.—*Leaves* nearly opposite, coriaceous, smooth, oblong, tapering into a long acumen, acute or rounded at the base; with

waved, minutely and sharply serrulate margins; shining dark green above; paler underneath, ribbed with parallel, oblique, entire, remotish nerves, the axils of which are slightly faveolate and villous; veins transverse, minutely and elegantly reticulate; from four to sixteen inches long.—*Petioles* about an inch long, deeply furrowed, the margin of the furrow sharp, sometimes waved.—*Stipules* at the base of the petiol, very small, lanceolate, striate, a little pubescent, deciduous.—*Panicle* terminal, and from the exterior axillæ, shorter than the leaves, villous, divided into sub-opposite, cylindric *racemes*.—*Flowers* small, greenish, fascicled. *Peduncles* round, covered with grey villosity. *Bractes* lanceolar, very caducous. *Calyx* pubescent, divided into five triangular, acute *laciniæ*, which are keeled above.—*Petals* exceedingly small, oblong, obtuse, entire, cowlled, hiding the stamens. *Pistillum* and *disc* as in the preceding.—N. W.

### 23. *Z. oppositifolia*, Wall.

Climbing, with opposite ramifications and short straight *thorns*, which grow out into branches. *Leaves* opposite, smooth, ovate-lanceolate, serrulate, tapering-acuminate, sub-retuse at the base, ribbed underneath. *Racemes* axillary and terminal, short, villous.

I have only found this in the forest at Gokurna in the valley of Nipal, blossoming in August and September.

This species is very much like the last described, but is no doubt distinct.—It is very large and extensively climbing. *Branches* divaricate, round, dotted; while young pubescent, widening at their divisions.—*Spines* alternate, straight, rigid, tapering from a round sub-cylindric base, about half an inch long, soon growing out into a branch.—*Leaves* opposite, or so near each other as to be almost opposite, spreading, firm and coriaceous, ovate-lanceolate, tapering from the rounded or sub-retuse base into a long acumen, acutely and minutely serrulate, scarcely at all waved, two or three, at the furthest, four inches long, dark green and shining above, strongly ribbed with sub-alternate nerves underneath; on short channelled pubescent petioles.—*Racemes* terminal, ramos and paniced, sim-

ple in the exterior axillæ; covered with grey soft villosity, the whole forming a pretty large brachiate panicle. *Flowers* fascicled, villous on the outside. The rest as in the two last species.

*Obs.* There are specimens preserved in the late Dr. Heyne's herbarium siccus, labelled *Rhamnus lineata* ? and *R. parviflora*, which probably are the same as *R. filiformis*, Syst. veg. v. 292, and Roth. Nov. spec. 153.—They come very near to my plant and may perhaps be one and the same species.—N. W.

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*Additional genera by N. W.*

**SPHAEROCARYA, Wall.**

*Calyx* five-parted. *Petals* five, alternating with the stamens. Five fringed scales between the stamens and the opposite calycine laciniae. *Ovary* without any disc. *Style* entire. *Drupe* inferior. *Nut* smooth, without sutures.

Artificial System: *Pentandria monogynia*, the section with five-petaled, superior flowers, and drupaceous fruit.

In the natural system it seems to belong to the doubtful subdivision of *Rhamnææ*, distinguished by an inferior fruit, and rendered still more irreconcilable with the character of that family in *this* instance, by the *inverted embryo*.

1. *S. edulis, Wall.*

Not uncommon in the forests in Nipal, about the valley, and on the mountains. Flowering time April and May. The fruit is not fully ripe until October.

Newar. Lushpoo; also Ael. or Eal-Murisee.

Parb. Bun-Amb.

A large, umbrageous and spreading tree, with ash-coloured bark:

*Branches* round ; *young shoots* and leaves clothed with abundance of long, silky, shining hairs. *Buds* ovate, rather large, sericeous, consisting of rounded, imbricate scales.—*Leaves* alternate, spreading, ovate-oblong, acuminate, perfectly entire, with somewhat recurved margins, base acute ; smooth and shining above, with furrows along the primary vessels, underneath with elevated rib, and a few alternate, very oblique, strong, hairy nerves, and reticulate veins ; of a rather fleshy or juicy texture, from three to six, and on luxuriant shoots even eight or nine inches long, deciduous during the winter months, and beginning to shoot forth about the period of blossoming.—*Petiol* scarcely half an inch long, convex underneath, channelled above. *Stipules* none.—*Racemes* terminal and from the outer axils, solitary, sub-sessile, densely villous, from two to three inches long, consisting of a few alternate, small, greenish, inodorous *flowers*, on short, clavate, fleshy naked *pedicels*.—*Calyx* above, five-parted, persistent, as are also the corolla, filaments, and style ; *laciniæ* triangular, acute, villous towards the apex, smooth within, spreading, scarcely half a line long, valvate during æstivation. *Petals* five, minute, ovate-obtuse, smooth, inserted within the fissures of the calyx, shorter than its *laciniæ*. *Filaments* five, short, smooth, erect, alternating with the petals, inserted at the bottom of the *laciniæ* of the calyx and opposite to them. *Anthers* erect, white, bilocular. Five exceedingly minute *scales*, bearded or fringed with a tuft of white succulent hairs, inserted between the filament and the opposite segment of the calyx.—*Ovary* underneath, clavate, rather large, shining, pubescent, concave at the top within the flower, one-celled, one-seeded ; *ovulum* oblong, pulpy, erect, supported by a fleshy, sub-diaphanous, spirally twisted chord, which rises from the bottom of the ovary and is conducted to the oblong cell by means of a proper tube or canal. *Style* cylindric, short. *Stigma* convex, obscurely two-lobed.—*Drupe* pear-shaped, about two inches and a half long, and one and a half thick, covered with a yellowish-green, tough cuticle, supported by a short, somewhat thickened peduncle ; the upper or broad end rounded with a central, pretty deep impression, which is surrounded

by the thickened, but otherwise not enlarged, calycine laciniae, petals, and filaments, and having a central vestige of the style; the base tapering and club-shaped; one-celled. *Flesh* of a pallid brown colour, soft, rather glutinous, about one-third of an inch thick, traversed longitudinally by a number of filiform vessels. *Nut* solitary, globular, large, smooth, without any sutures, filling exactly the cell and rather firmly adhering to its sides, marked with a few distant small pits into which some of the fibres of the flesh enter, upper end scarcely apiculate, base somewhat uneven and perforated; *putamen* grey, scarcely a line thick, one-celled, one-seeded. *Perisperm* amygdaline, white, conform to the nut, covered by a brown, thin membrane; it is perforated to above its middle by a capillary tube rising from the bottom opposite to the hole in the shell and vanishing upwards, containing seemingly the vestige of the above-mentioned chord of the ovulum. *Embryo* very short, oblong, white, situated rather obliquely under the vertex of the perisperm, a little within its periphery; *cotyledons* parallel, oblong; *radicle* superior, conical.

*Obs.* The inhabitants of Nipal are very fond of the fruit of this tree, which however to a European palate holds out but little temptation. The wood is nearly white, of a firm texture, and appears to me suited to the work of the cabinet maker, it is however, only used for firewood and posts.—The direction of the ovulum and that of the embryo are directly contrary, the former being decidedly erect, while the latter is pendulous.—N. W.

### CEANOTHUS, Linn.

*Petals* five, vaulted, opposite to the stamens. *Berry* dry, three-celled, three-seeded.

#### 1. *C. asiatica*, Linn.

Erect, smooth. *Leaves* ovate, serrulate, glossy, tri-nerved at the base; *peduncles* axillary, ramous, many-flowered, shorter than the leaves.



*Grossularia spinis vidua*, baccis in racemo congestis spadiceis, foliis crenatis ovato-acuminatis.—Burm. Zeyl. 111. t. 48.

*Rhamnus acuminata*, Colebr. Mss. fide ic. pict. in horto bot. Calc. asservata.

I have found this small tree in flower and fruit in October at Singapore. In the Hon. Company's botanic garden, where it was introduced from the garden at Reduite in the Mauritius in 1813, it blossoms in April and May, and ripens its fruit in June.

A small branchy tree or large shrub: the largest of those that were reared from the seeds measure at the present time (1823), about sixteen feet in height, with a stem scarcely more than four inches in diameter. *Branches* long, slender, round, with green bark, slightly flexuose, perfectly smooth; while young a little pubescent.—*Leaves* irregularly scattered, ovate, or ovate-lanceolate, tapering into a blunt acumen; serrulate, serratures small, gibbous, incurved, cuspidate, slightly undulate, base rounded or retuse, from two to three inches long; perfectly smooth, very glossy and lucid, of a dark green colour above; pallid and shining underneath, with a whitish slender rib and a few oblique nerves, the lowermost pair of which are opposite; the base rising a little above the rib, in consequence of which the leaf appears tripli-nerved; veins capillary, transversal, reticulate.—*Petiol* slender, a little compressed, channelled, slightly pubescent, about an inch long.—*Stipules* minute, withering, adpressed, lanceolate, with a broad fleshy base and glandular apex.—*Flowers* small, yellowish-green, fragrant, collected in rounded, axillary, ramous fascicles which are shorter than the petals.—*Peduncles* pubescent; *bractes* very small; *pedicels* capillary, two or three times longer than the flower, yellowish.—*Calyx* cup-shaped, with five broad, cuspidate, somewhat margined, deciduous *laciniæ*, equalling in length the cuneate, fornicate, narrow petals. Vertex of the ovary covered with a broad rugose yellow disc. *Style* short, deeply three-lobed, deciduous.—*Stigmas* convex, scabrous.—*Capsules* round-obovate, about the size of a small gooseberry, pale-brown, its vertex retuse, its base supported by the persistent circularly-truncate bottom of the calyx,

*tandria trigynia*. Lamarck has removed it to *monogynia* (illustr. bot. ii, 91. N. 360. tab. 130.) and I follow the example of that great botanist the more readily, because none of my species are trigynous, and the chief affinity of the genus points to that order.

In the natural or Jussieuan arrangement it belongs to *Rhamneæ*, or more properly to *Celastrinæ* of Mr. Brown.

I have found it in all the forests of the valley of Nipal and the surrounding mountains; blossoming from May to August, with fruit in October.

A stately tree, with a very thick stem, covered with greyish bark, and well furnished with branches; the younger branches purplish, rather angular, smooth.—*Leaves* alternate, spreading, oval, acuminate, acute at the base, perfectly entire, and smooth, rather fleshy, dark green, shining above, pallid and opaque underneath, with elevated rib and capillary, sub-opposite, short, remotish nerves which unite to-wards the margins in reticulate arches, veins invisible; from three to five inches long.—*Petiol* an inch long, smooth, channelled above, convex underneath, articulate at the base. *Stipules* opposite, very small, lanceolate, sub-falcate, acute, sometimes with a tooth or two, withering.—*Peduncles* axillary and lateral, pubescent, equaling the petiols in length, somewhat flattened, with two obscure, opposite furrows, bifid at the apex, each division bearing a rounded umbel of from twelve to sixteen small, white, smooth, inodorous flowers. *Pedicels* unequal, generally two or three lines long, rounded; each supported at the base by a very small ovate bracte.—*Calyx* ovate, divided into five ovate, blunt, membrane-margined, ciliate *lacinia*.—*Corolla* more than twice as large as the calyx, rotate, smooth; *lacinia* very deeply divided, ovate, rounded, crenulate, recurved over the calyx and alternating with its lobes; tube none; the base of the corolla firmly attached to the bottom of the calyx so as to be removed with difficulty. *Æstivation* imbricate, globular.—*Filaments* five, subulate, inserted below the fissures which separate the *lacinia* of the corolla, and about the same length, spreading; an-

*thers* ovate, two-celled, inserted on the middle of their back.—*Ovary* above, fleshy, smooth, ovate, acute and tapering into a style-like, short, thick neck. *Stigmas* five, subulate, spreading, stellate. *Perigynous disc* none.—*Berry* axillary, globose, as large as a currant, yellow, pulpy, crowned with the sessile, closely adpressed, flattened, stellate stigma, and supported by the small, sub-orbicular, five-lobed rudiment of the calyx; five-celled, five-seeded. *Seeds* oblong, triangular, with convex back, slightly curved lengthways, about as large as a carroway-seed, enveloped in a yellow, chartaceous *integument*; the upper, rounded, broadest end marked with a very small depressed umbilicus. *Perisperm* fleshy, semi-pelucid, conform to the seed, enveloped in a proper brownish pellicle.—*Embryo* milk-white, very small, situated in a short cylindric cavity at the top of the perisperm, inverted, as in *C. Maurocenia*, Gaert. Carp. ii. 70. t. 92.

*Obs.* Notwithstanding the rotate corolla and the increased number of the stigmas and seeds I have no hesitation in referring this fine tree to *Cassine*. What I have called above the neck or apex of the ovary I took at first to be the style; a supposition which is scarcely compatible with the stigma of the berry being decidedly sessile.—N. W.

## 2. *C. discolor*, Wall.

Arboreous. *Leaves* opposite, ovate-acuminate, tapering much downwards, whitish underneath, most entire. *Fascicles* axillary, dichotomous. *Stigmas* four.

A middling-sized tree, native of the mountains bordering on Silhet, where it blossoms in January.

*Branches* opposite, spreading, round, brown, scabrous, with numerous, callous, small dots; younger ones slender, slightly compressed at the insertion of the leaves.—*Buds* subulate, with opposite keeled scales.—*Leaves* opposite, spreading, rather longer than their interstices, ovate, or ovate-lanceolate, terminated by a long, blunted, linear acumen, perfectly entire, somewhat waved, tapering and acute

at the base, coriaceous, smooth, pallid and almost silvery underneath, with capillary, obscure nerves, disposed as in the preceding species; from three to five inches long.—*Petiol* half an inch long, deeply channelled; its insertion on the branch jointed. *Stipules* none. *Peduncles* opposite, axillary, very short, sub-quadrangular, smooth, scarcely equalling the petiol in length, twice dichotomous; ramifications jointed, three-flowered, with a sessile flower in each bifurcation. *Bractes* opposite, lanceolate, acute, very small. *Flowers* yellowish, rather longer than in *C. excelsa*, ternate, crowded, on very short fleshy *pedicels*, each supported by two bractes. *Calyx* exceedingly small, five-parted; *laciniæ* orbicular, sub-ciliate. *Corol* three times as large as the calyx, divided almost to the base into five oblong, obtuse, concave lobes, each having on the inner side a longitudinal, elevated, membranous line. *Æstivation* imbricate. *Stamina* attached to the base of the corolla; the *filaments*, *anthers*, and *pistillum* as in the first species, except that there is no vestige of any style. *Stigma* obscurely four-lobed, fleshy, sessile.

*Obs.* This elegant tree has much the appearance of a *Carallia*; but the structure of the flower differs widely.—N. W.

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### SCOPOLIA, Smith.

*Calyx* five-toothed. *Corol* five-petalled. *Germ* superior, five-celled; *cells* two-seeded, attachment interior. *Berry* five-celled, with generally one seed in each cell.

1. *S. aculeata*, *Smith. ic. ined.* ii. 34. *Willd. sp. i.* 1115.

Scandent, armed. *Leaves* ternate; *leaflets* crenulate.

*Paullima asiatica*, *Linn. sp. pl.* 524.

*Kaka-toddali*, *Rheed. mal. v.* 81. *t.* 41.

*Chamaelaea trifolia*, aculeata, floribus spicatis. *Burm. Zeyl.* 58. t. 24.

*Toddalia*, *Juss. gen.* 371; and *Lamarck illustr.* ii. 116. 2757. *Encycl. bot.* vii. 692.

*Cranzia*, *Schreb. gen.* N. 362.

*Telinga*. Conda Cashinda.

Is one of the most common bushes on the coast of Coromandel, delights in a rich soil, such as old hedges, under old trees, &c. is in general found in the state of a very ramous bushy shrub, but in less frequented place, where it meets with support and no enemies, it runs over the highest trees.

*Stem* irregular. *Bark* corky. *Branches* exceedingly numerous, scandent.—*Prickles* innumerable, scattered over every part of the younger branches, tender shoots, petioles, and nerves of the leaflets, recurved, very acute.—*Leaves* alternate, ternate, armed. *Leaflets* oblong, or broad-lanceolate, notched, emargined, smooth; about an inch and half long, and half or three-fourths broad.—*Petioles* channelled, armed like the branchlets.—*Racemes* axillary, generally compound, length of the leaves.—*Flowers* small, white.—*Calyx* inferior, small, glandular, five-toothed.—*Petals* five, oblong, spreading.—*Filaments* five, nearly as long as the petals, spreading. *Anthers* oblong, incumbent.—*Germ* ovate, five-celled, with two ovula in each, attached to the middle of the axis. *Style* short, thick. *Stigma* five-lobed.—*Berry* the size of a small cherry, compressed, five-grooved, orange-coloured, five-celled.—*Seed* one in each cell.

Every part of this shrub has a strong pungent taste. The roots when fresh cut smell particularly so. The fresh leaves are eaten raw for pains in the bowels; the ripe berries are fully as pungent as black pepper, and with nearly the same kind of pungency; they are pickled by the natives, and a most excellent one they make.

The fresh bark of the root is administered by the Telinga physicians for the cure of that sort of remittent, commonly called the hill fever. I conceive every part of this plant to be possessed of strong,

stimulating powers, and have no doubt but under proper management it might prove a valuable medicine where stimulants are required.

*BÜTTNERA*, Schreb. gen. N. 366.

*Calyx* five-leaved. *Corol* five-petalled. *Nectary* staminiferous, surrounding the five-celled superior germ. *Anthers* double. *Cap-sules* quinquecoccea. *Embryo* inverse; perisperm scanty.

1. *B. pilosa*, R.

Shrubby, twining, hairy. *Leaves* from three to five, acute-angled, dentate. *Umbels* axillary, proliferous.

A most extensive, twining shrub; a native of Chittagong. The *flowering* time in the botanic garden at Calcutta is September. The seeds are ripe in April.

*Stem* woody, twining, in five years old plants as thick as a man's wrist, and irregularly obtuse-sulcate. *Branches* numerous, twining up and over large trees, to a very great extent; the younger ones very hairy, and irregularly obtuse-sulcate.—*Leaves* alternate, petioled, having from three to five acute-angles, dentate, posterior lobes large and rounded; about seven-nerved, with a large, long gland on the middle one near the base, from four to six inches each way.—*Petioles* round, often as long as the leaves, hairy.—*Stipules* subulate, hairy.—*Umbels* axillary, generally one large, and super-decompound; and two or more smaller, all are clothed with short, harsh pubescence, and are much shorter than the leaves.—*Bractes* subulate.—*Flowers* numerous, small.—*Calyx* of five, spreading, pale-coloured, lanceolate leaflets.—*Petals* five; the lower third part of their length linear, yellow on the outside, and red within; much incurved so as to form a circular dome over the pistil and nectary, open at the five sides, and in the vertex, the other two-thirds filiform, below slightly incurved, above recurved; colour a bright orange. *Nectary* five-cleft, yellowish, divisions fleshy, truncate, shorter than the lower portion of the pe-

*tales*.—*Filaments* short, inserted into the fissures of the nectary, recurvate. *Anthers* two-lobed.—*Germ* round, hairy. *Style* short, five-grooved. *Stigma* minutely quinquidentate.—*Capsules* the size of a filbert, round, armed with long, rigid bristles; texture hard, approaching to that of a nut, five-celled, ten-valved.—*Seeds* solitary, small in proportion to its cell and attached to its inner angle, ovate-oblong, rather pointed at the apex, and obliquely truncate at the base. *Integuments* three; the *exterior* and *interior* membranaceous; the middle one hard and thick.—*Perisperm* none, or very thin.—*Embryo* inverse, yellow. *Cotyledons* large, two-lobed; and rolled spirally up. *Plumula* two-lobed. *Radicle* cylindric, nearly as long as the seed, superior.

2. *B. herbacea*, Roxb. *Corom.* 1. N. 29.

*B. cordata*, Willd. *spec.* i. 1119.

Unarmed, herbaceous, erect. *Leaves* cordate, serrate, downy. *Nectary* one-leaved, five-toothed.

An erect herbaceous plant, a native of the tops of the Circar mountains.

*Leaves* alternate, petioled, cordate, serrate, downy, two inches and a half long, and one and half broad.—*Stipules* reflexed, small, acute.—*Peduncles* axillary, one or more, three-flowered.—*Leaflets* of the calyx large, reflexed.—*Nectary* one-leaved, five-toothed; teeth converging over the pistillum.—*Filaments* five, very short, from the fissures of the nectary, reflexed. *Anthers* double; singly oval.

*Obs. by N. W.*

Specimens are preserved in Dr. Heyne's collection. The whole plant is sparingly beset with short, stellate hairs, and has much the appearance of some of our East Indian *Sida*. The leaves vary exceedingly much on one and the same plant, from linear, an inch or two long by one-third of an inch broad, to oblong-ovate and cordate, tapering from the very base almost. The middle rib is glandular

above the base. The capsule hairy, as large as a filbert with many subulate, bristly thorns.—N. W.

*Additional species by N. W.*

3. *B. aspera*, Colebr. Mss.

Shrubby, unarmed. *Leaves* broad-cordate, entire, obtuse with a short acumen, pubescent underneath, twice as long as the *petiols*. *Umbels* axillary, corymbose. *Capsule* very large, pubescent, with stout, short, remote thorns.

*Beng. Dhootura Luta.*

Introduced into the Hon. Company's botanic garden from Chit-tagong, by Mr. John Roxburgh, in 1812, since which time it has grown to be an enormously extensive climber, running over the largest mangoe trees in the garden, blossoming in the cold and hot seasons and ripening its fruit during the rains. It is also found in the district of Silhet, from whence Mr. De Silva sent me flowering specimens gathered in the month of May, under the native name of Hoori.

The stem measures at present (1823) nearly two feet in circumference, and soon divides into three very thick principal divisions; covered with brown bark. *Branches* round, pubescent, glaucous, unarmed.—*Leaves* alternate, membranous, broad-, sometimes round-cordate, entire, the rounded or retuse apex terminating in a short linear acumen, lobes of the base rounded, separated by a deep, rather narrow sinus, shining and somewhat bullate above, pubescent underneath, prominently five-nerved, with a thick, convex middle rib, having a little above its base, an oblong, flat, fleshy, pubescent, glandular protuberance, and sending forth along its tract sub-opposite, entire, oblique nerves which run out to the very margin, where they unite; *veins* elevated, transversal between the nerves; length from five to eight inches; while young villous, plicate.—*Petiols* pubescent, cylindric, rather slender, one-half the length of the middle rib.—*Corymbs* very numerous on the younger bran-



ches, villous, glaucous, fascicled, axillary, erect, four or five inches long, branchy ; with round, thickish, and fleshy *peduncles*, and linear-ensiform, caducous *bractes*. *Flowers* small, yellowish and villous without; pink-coloured within, collected in small umbellets, which are supported by an involucre of many spreading *bractes*. *Pediceles* short, fleshy.—*Calyx* divided to the base into five lanceolate, acute segments ; its bottom dark purple ; *æstivation* valvate.—*Petalals* fleshy, alternating with the laciniae of the calyx and shorter than they, cuneate, margins with a recurved tooth, tapering downwards into a purple claw, incurved, and uniting at the bifid apex so as to form a dome over the ovary and nectary; from a little below the apex of each issues a filiform, pubescent process, parallel to, but not conniving with those of the others, considerably elevated above the calyx. *Nectary* shorter than the dome of the corolla, diaphanous, fleshy; consisting of five oblong lobes united below by means of the alternating short filaments, the apices of which only are free. *Anthers* twin.—*Ovary* globular, scabrous, papillose ; *style* very short ; *stigma* minutely lobed, elevated to the mouth of the nectary.—*Capsule* large, globular, peduncled, nodding, measuring full two inches in diameter, flattish at the base, retuse at the vertex, without any remaining vestige of the flower, pubescent, of a dirty grey colour, echinate and rough with numerous short, stout, rather distant, conical, broad, sharp, straight prickles, which are about three lines long ; five-celled, five-seeded, ten-valved, separating at length along the woody axis, which is cylindric and thick as far as the middle, and filiform from thence upwards, into five triangular, distinct, smaller capsules, which are marked on their flat broad sides with a few bifurcate radiating veins ; their inner margin rectilinear ; bursting with an audible noise from its centre upwards and backwards to below the middle of the convex spinous back into two gaping valves. The cells are large, lined with a silvery, shining, tough membrane and containing a limpid viscid fluid, which is gradually absorbed, until at length, when the seeds are perfectly ripe, it entirely disappears. The five *dessepiments* consist of the contiguous, flat sides of the chambers of the capsule.

*Common* receptacle no other than the above mentioned axis, which sends forth from its middle five vertical, oblong, yellowish *placentas*. *Seeds* five (one in each cell or separate capsule) ovate-oblong, axi-pendulous, nearly perpendicular, two-thirds of an inch long, obtuse, rather narrower upwards, at least four times smaller than their cells. — *Integuments* two; *exterior* rather fleshy, brown, smooth, dotted with minute, shining black specks; *interior* leathery, thicker than the former, glaucous, bearing along its inner or ventral side a linear *raphis*, which ascends and descends from the central umbilicus and ends at each extremity of the perisperm in a slightly knobbed *chalaza*. *Perisperm* fleshy, white, thin, surrounding completely the *embryo*, which is inverted, oblong, somewhat truncate at both ends, greenish-white, straight. *Cotyledons* very large, broad-cordate, deeply divided into two obtuse lobes, many-nerved, twisted longitudinally and spirally round each other. *Plumula* inconspicuous. *Radicule* superior, cylindric, clavate, nearly as long as the cotyledons, concealed by them except at the base, which is a little prominent above the top of the embryo.

*Obs.* This is probably the largest species known. The fruit resembles that of a *Datura*, whence its Bengalee name *Climbing Dhootura*; its internal structure is extremely elegant. It comes very near to *B. catalpifolia*, which also attains a very large size, and with which I have compared it in all stages. They may, however, be easily distinguished by attending to the following points. The leaves in Jacquin's plants are tapering from the base upwards, their sinus is broad; while young they are lanceolate, with an entire, rounded base; in mine they are always broad-cordate, their margins rounded and their apex obtuse or retuse, with a short acumen; the sinus at the base is deeper and narrower; in that plant the petiol is nearly as long as the leaf, in mine one-half shorter. The fruit differs widely, being only one-half the size of that of *B. aspera*, and the thorns much more numerous and dense, and far less robust.—N. W.

W w

4. *B. Jackiana*, Wall.

Shrubby, unarmed, rough with stellate hairs. *Leaves* oblong, acuminate, entire, on very short petiols. *Flowers* axillary, corymbose, long-peduncled. *Capsules* echinate, with softish thorns.

A native of the hills at Pinang where it was discovered in 1819 by the late Mr. Jack. I have since had abundance of specimens collected by Mr. Porter. It blossoms during the last and first months of the year, and ripens its seeds in April.

A large, climbing, unarmed shrub, with round, lengthened, ferruginous branches, which, as well as the leaves are, rough with copious, stellate brownish hairs; while young densely villous.—*Leaves* scattered, rather approximate, oblong, or ovate-oblong, tapering into a fine acumen, perfectly entire, with a rounded base, from three to five inches long, scabrous on both sides in consequence of the hairs being shorter and rising from elevated points, densely villous underneath, five-nerved, the outer two nerves very short; reticulate; the middle rib with an oblong gland above the base, and two or three smaller ones along its course.—*Petiol* round, short, thickened at both ends, densely villous.—*Stipules* subulate, deciduous, hairy.—*Corymbs* branchy, axillary, about the length of the leaves. *Peduncles* hairy, filiform. *Bractes* linear, short. *Flowers* longer than those of the preceding species, disposed in spreading umbels, supported on capillary, very long peduncles.—*Calyx* hairy, decidedly five-leaved; leaves lanceolate, long acuminate and almost caudate, about five lines long, equalling the filiform processes of the petals.—*Capsule* globular, five-furrowed, light brown, almost smooth, an inch in diameter, densely beset with slender, subulate, softish thorns, minutely dotted, separating into five, smaller, one-celled, two-valved, one-seeded capsules, agreeing in every respect with those of the preceding species.—N. W.

*CELASTRUS*, Schreb. gen. N. 372.

*Calyx* five-cleft. *Corol* five-petalled. *Germ* three-celled, with two or more ovula in each cell; attachment inferior. *Capsule* superior,

from one to three-celled, from two to three-valved; seeds few, covered with a coloured aril. Embryo erect, and furnished with a perisperm.

1. *C. emarginata*, Willd. sp. i. 1128.

Shrubby, armed. Leaves obovate, entire, smooth. Flowers numerous, axillary. Capsules inflated; cells two-seeded.

Telinga. Chennee Chintoo.

Is one of the most common, rather poor looking shrubs in these parts of India, it grows every where and in every soil. Flowers during the cold season.

Stem nothing deserving the name, but branches innumerable, bent in every direction, and armed with exceedingly strong, large, straight, very sharp thorns.—Leaves alternate on the young shoots, on the old wood or thorns fascicled, very short-petioled, obovate, emarginate, smooth, shining; about an inch long.—Stipules small, withering.—Umbellets very short-peduncled, many-flowered, one or two from the centre of the fascicles of leaves. Pedicels many times longer than the peduncle, one-flowered.—Flowers small, whitish, yellow.—Petals twice the length of the calyx.—Nectary, a saucer-formed, crenulate, body surrounding the base of the germ.—Germ conical, three-celled, two ovula in each, attached to the bottom of their cell. Style single, half three-parted. Stigmas emarginate.—Capsule inflated, turbinate, three-sided, three-celled, three-valved. Seeds two in each cell, small, shining, red, resting on a white fleshy receptacle.

It makes good fences, and fuel.

2. *C. montana*, R.\*

Arboreous, thorny. Leaves obovate, serrulate, smooth. Panicles axillary, small, dichotomous. Capsules with cells two-seeded.

Telinga. Pedda-chintoo.

A small tree, a native of mountains. Flowering time the cold season.

Trunk erect, though generally a little crooked. Branches numer-

\* Syst. veg. v. 427. Roth, nov. spec. 154.—N. W.

ous, armed with the same large, sharp leaf and flower bearing thorns as in the last.—*Leaves* alternate, short-petioled, obovate, slightly serrate, smooth, shining; about two inches long.—*Panicles* axillary, dichotomous, many-flowered.—*Flowers* small, white.—*Petals* many times longer than the calyx. *Nectary* as in *C. emarginatus*. *Germ* round, three-celled, cells with two ovula in each, attached to the bottom of the cell. *Styles* three, short, clubbed.—*Stigmas* emarginate.—*Capsules* small, not inflated, in other respects like the last.—*Seeds* one or two in each cell, small, nearly round, attached as in the germ. *Aril* white, sebaceous, embracing the lower half of the seed. *Integument* single, polished, brown.—*Perisperm* conform to the seed, dull white, and hard.—*Embryo* nearly as long as the perisperm, erect. *Cotyledons* roundish. *Radicle* ovate, inferior, The wood of this tree is hard, and durable.

3. *C. paniculata*, Willd. sp. i. 1125.\*

Unarmed, shrubby, scandent. *Leaves* round, oval, serrate. *Panicle* terminal. *Stamens* inserted into a nectarial ring.

A large, climbing shrub; a native of the Circar mountains. Flowering time March and April.

*Branches* twiggy. *Bark* covered with grey, scabrous specks.—*Leaves* alternate, petioled, broad-oval, serrate, pretty smooth, about two inches long, and one and half broad.—*Petioles* round, and one-third the length of the leaves.—*Panicles* terminal, erect, thin, oblong.—*Bractes* small, falling.—*Flowers* small, yellow, numerous.—*Calyx* inferior, five-toothed; *segments* concave, emarginate.—*Petals* five, inserted between the nectary and calyx, spreading.—*Nectary* cup-shaped; border five-toothed.—*Filaments* five, which are a continuation of the teeth of the nectary, rather shorter than the petals. *Anthers* ovate.—*Germ* round. *Style* shorter. *Stigmas* three.—*Capsule* round, size of a pea, one-celled, three-valved, opening from the apex.—*Seeds* from three to six, surrounded with a yellow pulpy nidus, and always separating into three lobes, whatever the number be.

\* *C. Rothiana*, Syst. veg. l. c. 423. *Ceanothus paniculata*, Roth. l. c. 154.

4. *C. multiflora*, R.

Shrubby, scandent, unarmed. *Leaves* alternate, oblong, acuminate, serrate. *Panicles* terminal. *Stamens* alternate, with an equal number of reniform nectarial glands.

A native of Nipal, from thence Dr. Buchanan sent the seeds to the botanic garden at Calcutta, in 1802. In July 1808, the plants therefrom blossomed for the first time, and ripened their seed seven months afterwards.

*Trunk* short, about as thick as a man's arm. *Bark* brown, soft and spongy. *Branches* numerous, spreading much, and having their extremities often twining, but the scandent habit prevails most. *Leaves* alternate, short-petioled, drooping, oblong, acuminate, serrate, smooth on both sides; about six inches long, and from two to three broad.—*Stipules* minute, soon withering and drooping.—*Panicles* terminal, ovate-oblong, composed of many, simple, diverging, short, smooth racemes.—*Flowers* numerous, small, pale-greenish white.—*Bractes* very small, caducous.—*Calyx* obscurely five-toothed.—*Petals* oblong, inserted on the calyx, alternate with the stamens, soon after expansion recurved.—*Filaments* shorter than the petals, alternate, with as many semilunar nectarial glands.—*Germ* superior, ovate, three-celled, with two ovula in each, attached to the bottom of the cells. *Style* about as long as the stamens. *Stigma* of three emarginate lobes.—*Capsule* roundish, somewhat three-lobed, three-celled, three-valved, and generally with a single seed in each cell.—*Seeds* obovate, entirely covered by a thin, pulpy, scarlet aril. *Integuments* (exclusive of the aril), single, tender, white and smooth. *Persperm* of a soft cartilaginous texture.—*Embryo* erect. *Cotyledons* two, round-cordate, and so large as to divide the perisperm. *Radicle* inferior, pointing obliquely to the umbilicus.

*Obs. by N. W.*

The name being pre-occupied by an erect, armed species which Lamarck describes as being a native of Africa, it must be altered. I suggest *dependens*, being expressive of its pendulous leaves. The only

place in Nipal where I have met with this species is at Bheempadi and on the mountains of Chundrugiri with fruit in December.—*Capsule* straw-coloured, crowned with the short columnar style.—N. W.

5. *C. nutans*, R.

Shrubby, scandent, unarmed. *Leaves* alternate, petioled, broad-obovate, obtusely serrate, smooth. *Panicles* racemose, terminal. *Seeds* invested in a complete aril.

A native of Mysore, from thence introduced by Dr. Buchanan, into the botanic garden at Calcutta, where it flowers in April. *Seeds* ripe in August.

*Stem* short, round, woody, scandent. *Bark* a little scabrous, light brown. *Branches* climbing and twining over the tops of large trees, &c.; *young shoots* round, drooping, marked with white, rough dots. *Leaves* alternate, short petioled, drooping, broad, obovate, cuneate, serrate, smooth on both sides; length from two to three inches, and from one to three broad.—*Petioles* about half an inch long, slightly channelled.—*Stipules* minute, deciduous.—*Racemes* or panicles terminal, drooping, sub-cylindrical, a little downy.—*Bractes* a single, acute, very small, caducous one at the base of each pedicel.—*Calyx* deeply five-parted, divisions roundish, slightly pubescent, several times shorter than the petals.—*Petals* five, alternate with the divisions of the calyx, spreading; margins becoming recurved.—*Nectary* a concave, five-sided receptacle, on which the germ rests.—*Filaments* five, very short, inserted on the five angles of the nectary, alternate with the petals. *Anthers* sub-sagittate.—*Germ* ovate, three-lobed, three-celled, with two *ovula* in each, attached to the base of the axis. *Style* scarcely any. *Stigma* three-lobed, lobes spreading, with notched margins.—*Capsule* round, size of a pea, one-celled, three-valved.—*Seeds* from three to six; three or four is the most common number; shape conform to the number, each invested in a thick, complete, fleshy, orange-coloured aril. *Integument* single.—*Perisperm* conform to the seed, white and hard.—*Embryo* straight, erect, green. *Cotyle*

*dons* oblong. *Radicle* cylindric, inferior, with its apex pointing to the umbilicus.

*Obs.* There are five or six large plants of this in the botanic garden, of these one only is hermaphrodite and fertile, all the rest are male, or male-hermaphrodite, and barren.

*Obs. by N. W.*

I have found this elegant species on the hills at Rajmahul, in fruit in August. Specimens have also been communicated to me by my valued friend Capt. W. S. Webb, gathered about Sirinagur. —N. W.

6. *C. trigyna*, R.\*

Unarmed. *Leaves* alternate, short-petioled, oblong, entire. *Flowers* on small, axillary, dichotomous, round heads. *Nectary* of five scales, alternate in the stamen. *Styles* three.

A native of the Moluccas.

7. *C. verticillata*, R.

Arboreous, unarmed. *Leaves* scattered, broad-lanceolate, waved, entire, smooth. *Panicles* terminal, umbelliferous. *Capsules* one-celled, two-valved, few-seeded.

Reared in the botanic garden at Calcutta from seeds sent from Nipal by Dr. Buchanan in 1802, under the vernacular name *Tibiliti*. The young trees flowered for the first time, in the rainy season of 1805, when they were from twelve to fifteen feet high. The seeds ripen in January.

*Trunk* straight; the branches and branchlets have a strong tendency to be verticillate. *Bark* of the trunk, and larger branches greenish ash-coloured, dotted with some small, elevated, lighter-coloured specks. —*Leaves* numerous, drooping, scattered, more crowded towards the

\* This name must be altered, there being another plant so called by Lamarek. See *C. obtusifolia*, Roth. p. 394. —N. W.



ends of the branchlets, and like them having a tendency to be verticillate, petioled, broad-lanceolate, acute, entire; margins waved, smooth, upper surface polished; about six inches long, by two broad.—*Petioles* rounded on the under side, flattish above.—*Stipules* none. *Panicles* terminal, with alternate, spreading, umbelliferous, simple ramifications.—*Peduncles* and pedicels round, and smooth.—*Bractes* lanceolate.—*Calyx* five-leaved. *Leaflets* ovate-oblong, slightly ciliate.—*Petals* five, alternate with, and three times longer than the leaflets of the calyx, linear-oblong, entire, obtuse, at first spreading, afterwards recurved, with the edges revolute.—*Germ* ovate-oblong, a little compressed, two-, rarely, three-celled. *Style* erect, permanent. *Stigmas* two-, rarely, three-lobed, about even with the anthers.—*Capsules* roundish, size of a large pea, dry, rugose, one-celled, two-valved, opening round the apex.—*Seeds* from one to six, or even eight, attached to the centre of a ridge in the bottom of the cell, which crosses the opening of the valves; their shape varies according to the number of seeds. *Integument* single, and while fresh more like a thin, smooth, soft, moist, entire, scarlet aril, than a common skin.—*Perisperm* conform to the seed, cartilaginous.—*Embryo* erect, minute, lodged in the base of the perisperm, rather below the umbilicus. *Cotyledons* two, very small. *Radicle* inferior, oval.

*Obs. by N. W.*

This is among the more common tree in Nipal where it grows to the size of a Litchee tree. I have found it from the very entrance to the hills, at Bechiako, to the valley and on the mountains surrounding it. I have also specimens collected by Kamroop about Shree-nugur. The blossoms are produced from April to July, and the fruits ripen from the beginning of August to the end of November. The trunk is covered with ash-coloured, pretty even bark; the wood is of a light-colour, and not used except for common purposes.

If it were not for the many difficulties, under which this genus already labours, I could augment the number of species by a good

many more than those which I have ventured to add. Of this I am certain, that several which have been received as distinct ones by authors are by no means different.—*Pittosporum* is very little different from *Celastrus*, except in the *shape* of its cotyledons. The species last described may be either the one or the other; its habit is entirely that of a *Pittosporum*. I have specimens in flower, gathered in April on the Pundooa mountains of the N. E. frontiers of Bengal, which differ in no ways except in the densely villous ovary, which in our tree is only slightly pilose.—Among the specimens of the late Dr. Heyne, preserved at the Hon. Company's botanic garden, I find some without name or place which are very like *C. verticillata*; but they agree still better with fruit-bearing specimens gathered at Pinang by Mr. Jack, which undoubtedly belong to *Cortex filarius*, Rumph. amb. auctuar. 13. t. 7, (quoted above p. 317.)—Sir J. E. Smith considers it as the same as *P. ferrugineum*, Ait, kew. ed. 2. ii. 27, in Rees's Cyclopaedia in loco.—N. W.

#### 8. *C. micrantha*, R.

Scandent, somewhat armed. *Leaves* unequally pinnate; leaflets from five to seven, opposite, oblong, entire, smooth, with simple parallel veins. *Panicles* axillary, filiform, ferruginous. *Nectary* saucer-shaped, bearing the stamina on its margins, style none.

A native of the Moluccas, a very doubtful species.

#### 9. *C. obtusifolia*, R.

Arboreous, unarmed. *Leaves* petioled, lanceolar, obtusely serrulate, very obtuse, hard, smooth. *Peduncles* axillary, many-flowered.

A native of the Mauritius.

*Obs. by N. W.*

This I doubt not is Lamarck's *C. trigyna* (illustr. ii. 94. N. 2699) to which I have alluded above, p. 391. It was introduced from the Mauritius into the Hon. Company's botanic garden at Calcutta, by

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Major-General Hardwick, in 1811. It blossoms in the month of May.

An elegant, perfectly smooth shrub or small tree, branching from the base of the stem.—*Branches* very slender, round, long, covered with ash-grey bark; they have scarcely any tendency to climb or ramble, but are nodding at the apex. *Young shoots* glaucous, surrounded at the base by a number of small, withered *bud-scales*.—*Leaves* very irregularly scattered, so closely approximate at the end of the branches as to become almost fascicled; varying in their form on one and the same branch, from linear to lanceolate-oblong, or cuneate, from two to three, or even four inches long, obtuse and rounded at the apex, tapering towards the base; the margins remotely serrulate, the serratures gibbous and very obliquely cuspidate; of a thick, nearly fleshy texture, pale green, opaque, ash grey, and elegantly reticulate underneath when dry, otherwise nearly destitute of nerves and veins.—*Peduncles* axillary, filiform, generally half the length of the leaves, compressed, once or twice dichotomous. *Bractes* at the middle of the pedicels, lanceolate, fringed, sub-verticillate.—*Flowers* small, white. *Lacinia* of the *calyx* ovate, ciliate, four times shorter than the petals, — *Stigma* obscurely three-lobed.—N. W.

#### 10. *C. monosperma*, R.

Shrubby, scandent. *Leaves* oblong, glossy, serrulate. *Panicles* thin, linear, axillary and terminal, longer than the leaves. *Capsules* three-valved, one-seeded.

Tiara the vernacular name in Silhet, where it is found wild in thin forests, climbing, and twining up and over trees, &c. to a great extent. Flowering time the month of April. Seeds ripe in October.

*Young shoots* smooth and brown, perfectly void of every kind of pubescence.—*Leaves* alternate, short-petioled, from obovate-oblong to lanceolar, glossy on both sides, serrulate, obtusely pointed, from three to five inches long, and one or two broad.—*Panicles*

axillary and terminal, linear, thin of branches, two, three, or even four times longer than the leaves, smooth.—*Flowers* numerous, small, pale greenish yellow.—*Bractes* subulate, small, smooth.—*Calyx* five-parted, segments short and rounded.—*Petals* five, sub-orbicular, inserted, alternate with the stamens under the margin of the flat repand nectary, which embraces the base of the germ.—*Filaments* five, short. *Anthers* oval.—*Germ* obovate, oblong, three-celled, with two ovula in each attached to the bottom of the cell. *Style* short. *Stigma* trigonal.—*Capsule* the size of a field bean, oblong, smooth, three-valved, but I never found more than one cell.—*Seed* solitary, covered with an orange-coloured, pulpy tunic, under it a single, tender integument, of a light brown colour.—*Perisperm* conform to the seed, pure white.—*Embryo* erect, deep green. *Cotyledons* oblong. *Radicle* oval, inferior.

*Obs. by N. W.*

I have had this species also under the native name of *Luta Kuniki*. I add the following carpological details, supposing that they may not prove altogether uninteresting.

*Capsule* slightly three-cornered, greenish, bursting into three recurved valves, each of which is keeled within. *Arillus* scarlet, slightly pervious at the apex of the seed. *Funicle* consisting of a narrow linear fascicle of vessels, surrounding entirely the external covering of the seed, in a direction corresponding to the margins of the embryo. *Embryo* most beautifully green. *Cotyledons* foliaceous, contiguous, very large, slightly cordate, occupying nearly the whole breadth of the perisperm, and the *radicle* reaching almost its base.  
—N. W.

11. *C. robustus, R.*

*Leaves* alternate, lanceolar, entire, glossy. *Racemes* axillary; length of the leaves. *Capsule* one-celled, two-seeded.

X x 2

Sheelkoil the vernacular name in Silhet, where it is indigenous and grows to be one of their largest timber trees. It blossoms in August, and the seeds ripen in March.

*Young shoots* straight, round, and smooth.—*Leaves* alternate, petioled, lanceolate, entire, acuminate, firm, and even glossy; about six inches long, and one and half or two broad.—*Stipules* small, caducous.—*Racemes* axillary, single, or paired, simple, cylindric, length of the leaves.—*Flowers* numerous, and over every part of the raceme, small, greenish yellow.—*Bractes* conical, one under each pedicel.—*Calyx* five-parted; *segments* oblong.—*Petals* five, oblong, spreading. *Nectary*, a fleshy, five-lobed ring round the base of the germ.—*Filaments* five, rather longer than the petals. *Anthers* two-lobed.—*Germ* superior, round, with a little long white wool on the apex, two-celled, with two ovula in each attached to the base of the cell. *Styles* two; slightly united at the base, recurved. *Stigmas* headed.—*Capsules* ovate-oblong, size of a small olive, smooth, brown, one-celled, two-valved.—*Seeds* generally two; when so lanceolate, and flat on the inner side, arilled. *Integuments* smooth, light chesnut-colour, pretty thick and may while recent be divided into two or three lamina; *aril* complete within half a line of the apex, thick and soft, colour a lively bright yellow.—*Perisperm* conform to the seed, soft, white.—*Embryo* erect.—*Cotyledons* cordate.—*Radicle* cylindric, as long as the cotyledons, interior.

#### *Additional species by N. W.*

##### 12. *C. rigida*, Wall.

Shrubby, erect, rigid. *Branches* round, flexuose, with leafy spines. *Leaves* very tough, obovate-cuneate, sharply serrulate. *Corymbs* small, scattered among the leaves.

##### *C. buxifolia*, Hort. beng. 18.

Introduced into the Hon. Company's botanic garden at Calcutta from Travancore, by Dr. A. Berry, in 1811. Time of blossoming the rainy season. In Dr. Heyne's hortus siccus specimens are preserved without any specific name.

A ramous, remarkably rigid and thorny shrub, rising as far as eight feet in height. *Branches* thick, round, without any tendency to become angular, strongly flexuose, ash-coloured, dotted, smooth, as are all the other parts. *Spines* alternate, issuing from the flexures of the branches, often exceeding two inches in length, strong and rigid, round, divaricate, producing leaves and even flowers, and gradually growing out into branches.—*Leaves* at first fascicled on the spines, their insertions surrounded by a number of subulate, minute, evanescent, ciliate *bud-scales*, becoming alternate; obovate-cuneate, acute or obtuse, more frequently retuse, on old branches nearly round-obovate, sharply serrulate, tapering and entire at the base, from one to two and a half inches long, firm and leathery, smooth, glossy above, of a pale-yellowish green underneath, with sub-opposite, filiform nerves, and reticulate capillary veins.—*Petiol* very short, slightly sulcate.—*Flowers* small, sub-corymbose on capillary, fascicled *peduncles*, inserted on the spines among the leaves. *Pediceles* sub-dichotomous. *Bractlets* opposite. *Lacinia* of the calyx ciliate. *Style* bifid.

*Obs.* Linneus's *C. buxifolia* is a native of *Africa*, its branches are angular and straight, the leaves crenate, not sharply serrate, and the flowers paniced: differences which, in my estimation sufficiently warrant my separating the Travancore species under a distinct name.—N. W.

### 13. *C. rufa*, Wall.

Arboreous, erect, smooth, sparingly armed with axillary short spines. *Leaves* lanceolate, acuminate, serrulate. *Corymbs* axillary, capillary, fascicled, on capillary coloured *peduncles*. *Capsule* obovate, triangular, three-seeded.

Common in the forests of the valley of Nipal. I have also found it at Tambakan. Blossoming in March and April; fruit ripening in June.

A large very branchy tree. *Branches* round, brown, dotted, scabrous, sparingly armed with axillary, short, straight spines generally

equalling the petiols in length, sometimes twice as long; *young branches* angular, of a more or less deep red colour, glaucous.—*Leaves* scattered, approximate, firm and coriaceous, perfectly smooth at all times, as are all the other parts; lanceolate, acuminate, obtusely and almost gland-serrulate, acute at the base, from three to five inches long; shining above; pallid, slightly glaucous, reticulate underneath. *Petiol* very short, channelled, reddish.—*Stipules* opposite, very small, lanceolar, crenato-ciliate, withering.—*Peduncles* extremely numerous, axillary, fascicled, capillary, rufous, scarcely exceeding one-half of the length of the leaves, di- or tri-chotomous, bearing a corymb of very small white *flowers*, supported on capillary *pedicels*, which are jointed at the middle. *Bractes* lanceolate. *Lacinia* of the *calyx* and *petals* rounded, crenulate. *Capsule* small, obovate, trilobed, three-celled, three-valved, three-seeded.

*Obs.* The leaves and thorns of this species differ considerably in their size, according to the more or less exposed or luxuriant state of the tree. The flowers are small, supported by capillary reddish peduncles, almost covering all the younger branches. The fruit is extremely like that of a *Ceanothus*.—N. W.

#### 14. *C. opposita*, Wall.

Unarmed, smooth, with opposite jointed branches; younger ones tetragonous. *Leaves* opposite, lanceolate, obtuse, entire. *Peduncles* axillary, three-flowered.

Probably an inhabitant of the Peninsula of India. Specimens are preserved in Dr. Heyne's collection, labelled *Rhamnus polifolia*, which, however, is a widely different plant.

Seemingly a *shrub*. *Branches* opposite, jointed at the subdivisions, filiform, round, ash-coloured, tetragonous at their ends, together with all the other parts perfectly smooth.—*Leaves* opposite, lanceolate, obtuse, sometimes rounded at the apex, rarely cuneate, tapering and acute at the base, on very short sulcate, articulate petiols, scarcely exceeding two inches in length, perfectly entire

and smooth; reticulate when dry.—*Stipules* none.—*Peduncles* filiform, axillary, opposite, twice as long as the petioles, three-flowered. *Bractes* minute, triangular; two at the base of the common pedicel, and four verticilled surround the insertion of the short pedicels.—*Flowers* small.—*Lacinia* of the *calyx* short, rounded. *Petals* ovate, obtuse.—*Anthers* large, ovate.—*Style* columnar; *stigma* obscurely two-lobed.

*Obs.* In general appearance and in the varying figure of the leaves it is much like *C. trigyna*, Lam., but it is sufficiently distinct by its opposite branches and leaves and the entire margins of the latter.—N. W.

15, *C. bivalvis*, W. Jack, in *Mal. Misc.* i.

*Leaves* lanceolate, acuminate, entire. *Peduncles* lateral, few-flowered. *Corolla* wanting. *Capsule* two-valved, one-seeded.

A shrub with smooth branches. *Leaves* opposite, petiolate, lanceolate, acuminate, acute at the base, very smooth. *Stipules* none.—*Peduncles* lateral, divaricately dichotomous, few-flowered, (five- to ten-flowered). *Bractes* small. *Calyx* five-parted, bibracteate at the base; *lacinia* roundish, imbricated. *Corolla* none. *Stamina* five, erect, united beneath into a five-toothed ring or urceolus; *filaments* flat; *anthers* oblong.—*Style* erect, as long as the *stamina*. *Stigma* truncate.—*Capsule* ovate, green, smooth, crowned with the style, two-valved, one-celled, one-seeded; valves opening from the base, and falling off from the seed, which is more persistent and remains on the peduncle. *Seed* ovate, contained in a beautiful crimson *arillus*, which is delicately veined. *Albumen* cartilaginous, conform to the seed. *Embryo* erect, central, as long as the albumen. *Cotyledons* flat, foliaceous, ovate, obtuse. *Radicule* inferior, obverse to the umbilicus, round, much shorter than the cotyledons.—W. Jack, l. cit.

*Obs. by N. W.*

I have specimens with fruit collected at Pinang by my late friend,



which are very distinct from all the other species. The petals are opposite and inserted on the branch by means of a joint.—N. W.

16. *C. lucida*, Wall.

Unarmed, smooth, scandent? *Leaves* ovate, acute, serrate, glossy and shining. *Capsules* triquetrous, tri-valved, disposed in axillary racemes, many-seeded?

My knowledge of this species is derived from a single fruit-bearing specimen, gathered at Pinang by Mr. Jack, in 1819. The leaves are remarkably tough and leathery, of an elegant oval form, about three inches long, dark-green above, pallid and reticulate underneath; *petiol* half an inch long.—*Capsules* disposed in axillary, solitary, or geminate short *racemes*, sharply three-cornered, with divaricate valves. I have not seen the seeds.—N. W.

17. *C. pauciflora*, Wall.

Unarmed, erect, smooth, shrubby. *Leaves* lanceolate, acuminate, serrulate. *Peduncles* axillary, from six to eight-flowered. *Pistil* villous. *Nectary* five-lobed *Capsule* triangularly globose, tri-valved.

A native of Pinang where it is called Boonga Lawung.

A shrub with smooth branches. *Leaves* alternate, very short-petioled, lanceolate, acuminate, slightly serrated, very smooth. *Stipules* lanceolate, acute, very deciduous. *Peduncles* short, axillary, solitary; from six to eight-flowered. They are frequently from the axils of the fallen leaves. *Flowers* yellowish green, fascicled, short-pedicelled. *Bractes* small, acute. *Calyx* inferior, ovate, five-leaved, leaflets ovate, acute, conniving at their apices.—*Corolla* yellowish, five-parted, petals inserted on the receptacle, ovate-lanceolate, acute, a little longer than the calyx, and alternating with its leaflets. *Nectary* short, five-lobed, surrounding the germ. *Stamina* five, inserted into the lobes of the nectary, erect, included; *anthers* sagittate, acute, conniving into a ring round the style. *Ovarium*, superior, ovate, one-celled, six-seeded.—*Style* a little longer than the stamina, tomentose together with the ovary. *Stigma* simple.—*Capsule* sur-

rounded at the base by the persistent calyx and the withered corolla and nectary, triangularly globose, three-valved, one-celled; seeds attached along the middle of each valve to parietal prominent placentæ, six in number, several aborting, roundish and angular.—W. Jack's Mss.

*Obs. by N. W.*

The preceding description was communicated by my late friend Jack, without any specimens. He was doubtful of the true genus, and gave the shrub the temporary name of *Pittospora serrulata*; adding the following generic character and habit. "*Calyx* beneath, five-leaved, erect. *Corolla* five-petalled: *petals* alternating with the calyx. *Nectary* five-lobed, surrounding the ovary. *Stamina* five, inserted on the nectarial lobes. *Ovary* one-celled, six-seeded. *Capsule* three-valved, one-celled, with three parietal *placentas*. Some of the seeds abortient.—A pentandrous, monogynous shrub, with alternate leaves and axillary inflorescence."

This may perhaps be a *Pittosporum*, but its serrated leaves and one-celled capsule have induced me to place it here.—N. W.

18. *C. stylosa*, Wall.

Scandent, unarmed. *Leaves* ovate-lanceolate, acuminate, acutely serrate. *Peduncles* axillary, few-flowered, racemose. *Petals* oblong. *Capsule* globular, crowned with a long style.

This is a large rambling and climbing shrub, which I have found in similar places in Nipal with *C. multiflora*, Roxb. to which it has great resemblance; also on several of the hills about the valley. It blossoms in May and ripens its fruit towards the end of the year.

The whole plant is smooth. *Branches* long, slender, dotted.—*Leaves* scattered, about three inches long, much like those of *C. multiflora*, R. but smaller; acute at the base; on very short *petiols*. *Peduncles* axillary, bearing a few racemose, greenish-white, pedicelled

flowers, resembling those of the above mentioned species. *Capsule* round, yellow, crowned with a long cylindric style, which is terminated by the recurved, tri-lobed, three-furrowed stigma.—N. W.

*EUONYMUS*, Schreb. gen. N. 373.

*Corol* from four- to five-petalled. *Germ* from two- to five-celled, cells two-seeded, attachment inferior. *Capsule* superior, three or four-celled, three or four-valved. *Seeds* calyptred. *Embryo* erect, and furnished with a perisperm.

1. *E. atropurpurea*, Willd. spec. i. 1132.

Shrubby, erect. *Leaves* opposite, lanceolar, smooth, serrulate, *Peduncles* few-flowered; *flowers* tetrandrous.

Found by Dr. Buchanan in Nipal from whence he sent seeds to this garden, where in eight years the plants are four or five feet high, thin of branches; and now beginning to blossom in March.

*Trunk* erect. *Bark* smooth, and ash-coloured. *Branchlets* spreading, round, and smooth.—*Leaves* opposite, short-petioled, lanceolar, smooth on both sides, very finely serrulate, from four to six inches long, by one and a half broad.—*Stipules*; while the shoots are quite tender a small soft bristle or two occupy their place.—*Peduncles* below the leaves, opposite, expanding, dichotomous, each division three-flowered, with generally one in the fork.—*Flowers* pedicelled, small, greenish white.—*Calyx* four-leaved; *leaflets* round, concave and smooth.—*Petals* four, cordate, lanceolate, expanding; margins revolute, white, and smooth.—*Nectary* a deep green, four-lobed, fleshy body surrounding the base of the germ.—*Filaments* four, rather longer than the pistillum, inserted on the four lobes of the nectary. *Anthers* two-lobed, dark brown.—*Germ* superior, four-lobed, four-celled, with two ovula in each, attached to the middle of the axis. *Style* four-sided. *Stigma* obtuse.

*Obs. by N. W.*

This I have found in all parts of the valley of Nipal which I have visited, as well as on the neighbouring mountains, blossoming during the rains, and ripening its fruit towards the close of the year. I have also had it from Shreenugur, and Surmoor. It is a branchy slender tree, growing to the height of from sixteen to twenty feet. The wood is beautifully white and compact.—*Capsules* yellow, smooth, turbinate, four-lobed, but not four-winged; lobes strongly projecting, divided by an equal number of furrows, the vertex crowned by the short vestige of the style, base surrounded, as in all the other species, by an annular rudiment of the calyx; it is rather smaller than the fruit of *E. europaea*, Gaertn. Carp. ii. 149. t. 113, but agreeing with it in internal structure.—I suspect that the tree is different both from that species, and from *E. atropurpurea* of Jacquin, though not perhaps from *europaea*, Thunb. jap. 101; and propose calling it *E. Hamiltoniana*, after its most worthy discoverer.—N. W.

2. *E. glabra*, R.

Arboreous. *Leaves* opposite, oblong, smooth, with the anterior margin serrate. *Peduncles* axillary and lateral, two or three times dichotomous, with a single flower in each fork; *flowers* pentandrous.

A small tree, a native of Chittagong, where it flowers in May.

3. *E. garcinifolia*, R.

Sub-arboreous. *Leaves* opposite, lanceolar, entire, smooth. *Peduncles* between the leaves, three-flowered. *Capsule* two-valved, one-seeded.

More the vernacular name in Silhet, where it is indigenous; growing to the size of a small upright tree; flowers and ripe seed were found on the same trees in the month of January 1812, but whether it is in constant flower and fruit the whole year round, I cannot say.

*Branchlets* opposite, round, and covered with smooth brown bark.—*Leaves* opposite, short-petioled, lanceolar, entire, smooth on

both sides; from three to four inches long, by about one broad.—*Peduncles* between the pairs of leaves, sometimes opposite, sometimes solitary, short, and three-flowered.—*Flowers* short-pedicelled, small, pale-yellow.—*Bractes* subulate, caducous.—*Calyx* five-leaved; *leaflets* roundish, smooth and imbricated.—*Petals* five, oblong, margins incurved, many times longer than the calyx; down the middle on the inside, runs an elevated sharp rib.—*Filaments* five, shorter than the germ, alternate with the petals. *Anthers* erect, long-cordate.—*Germ* superior, ovate, two-celled; each cell containing two ovula, attached to the thickened middle of the partition. *Style* none, or very short. *Stigma* four-toothed.—*Capsule* oblong, size of a small field bean, smooth, one-celled, two-valved opening from the base.—*Seeds* solitary, at least I have not found more, oval, covered with a thin, succulent, veined, bright, scarlet aril.—*Perisperm* conform to the seed, firm, and tough.—*Embryo* erect. *Cotyledons* ovate-cordate. *Radicle* cylindric, inferior.

*Additional species by N. W.*

4. *E. grandiflora*, Wall.

*Leaves* obovate-oblong, obtuse, acutely serrulate, with a tapering, entire base. *Peduncles* slender, flattened, nearly equalling the leaves, from three- to six-flowered. *Capsule* globular, pendulous, obscurely four-cornered, with pendulous, sub-geminate *seeds*; supported by the thickened and enlarged calyx.

I have met with it in various forest in the valley of Nipal, blossoming in April and May, and ripening its fruit in September.

A small branchy tree, rising only to the height of ten or twelve feet. *Branches* round, slender, grey, smooth, as are all the other parts; *branchlets* opposite, slightly four-cornered, somewhat compressed, with two opposite capillary furrows.—*Leaves* opposite, leathery, from oblong to ovate, obtuse, sometimes rounded at the apex, sharply serrulate, acute, and entire at the base; from three to four inches long, perfectly smooth on both sides, shining above, pallid underneath, with sub-opposite capillary nerves, and reticulate veins.—*Petiols* very

short, furrowed.—*Stipules*, minute, withering.—*Peduncles* axillary, opposite, exceedingly slender, filiform, flattened, almost equalling the leaves in length, from three- to six-flowered.—*Pedicels* divaricate, articulate at the base, where they are furnished with a pair of minute, vanishing *bractlets*.—*Flowers* white, inodorous, very large, and showy, spreading, tetrandrous, measuring ten lines in diameter, slightly nodding.—*Calyx* broad, flat, with four short, rounded, ciliate, erect lobes; it is gradually reflected as the flower expands, becoming thick and fleshy, of a dark shining green colour above, and vaulted underneath, in which state it continues under the ripe fruit.—*Petals* four, large, white, spreading, orbicular, flat, with crispate margins.—*Stamens* short, remote, at first erect, afterwards recurved, sub-immersed in the fleshy bottom of the calyx. *Filaments* subulate, persistent. *Anthers* erect, ovate, didymous.—*Ovary* ovate, pyramidal, semi-immersed, shining, four-celled, many-seeded; *ovula* sub-pendulous from the axis. *Style* short, persistent. *Stigma* obtuse. *Capsule* nearly globular, slightly four-cornered, of the size of a cherry, supported by the broad, convex, truncate calyx, four-celled, four-valved. *Seeds* oval, shining black, supported without any wings, and half covered by a brilliant red, minutely lobed, and verrucose *arillus*; in general each cell contains two, which hang down on a short funicle.

*Obs.* This is a very beautiful shrub, both when in flower and when loaded with its yellow pendulous capsules, each of which is furnished with as many as six black, pendulous seeds.—N. W.

5. *E. japonica*, Thunb. *jap.* 100.—*Banks icon.* Kaempf. 8.

*Branchlets* pendulous. *Leaves* oblong, sharply serrulate, acuminate. *Corymbs* axillary, fascicled, many-flowered, crowded and panicled on the young shoots; *peduncles* flattened. *Capsule* with four horizontally spreading, vertical wings.

*Iso Kuroggi*, Kaempf. *amoen.* 790, (according to Thunberg.)

Grows on Sheopore and Chundrugiri in Nipal, where it commences blossoming in April, ripening its fruit in June and July. I

have specimens gathered on the Sewalik mountains by my friend Dr. Govan, at an elevation of from three to five thousand feet, and at Shreenugur by the plant collectors of the Hon. Company's botanic garden.

A branchy tree, growing to the height of twenty feet. *Stem* as thick as a man's arm, or thicker, covered with grey bark. *Bran-ches* smooth, long, slender; the outer ones pendulous, opposite, sometimes dichotomous; *young shoots* slightly compressed.—*Leaves* opposite, spreading, oblong, sharply serrulate, long-acuminate, acute at the base, from four to six inches long, perfectly smooth, shining above; they have often while young a shining brown colour. *Petiol* very short. *Stipules* consisting, as in the first species, of minute opposite scales, from which issue one or two transparent, subulate, branchy hairs.—*Peduncles* axillary, opposite, crowded and paniced on the recent shoots, loose, somewhat shorter than the leaves, two or three times dichotomous, bearing several small, white, tetandrous, rarely pentandrous *flowers*; those from the bifurcations longer-pedicelled than the rest.—*Bractes* opposite, acuminate, ciliate, caducous.—*Pedicels* angular, slightly clavate.—*Calycine lacinia* rounded, ciliate. *Petals* mostly four, orbicular, ciliate, twice as long as the calyx, inserted by a broad basis.—*Stamina* very short. *Ovary* semi-immersed, pyramidal, four-celled; each cell containing two sub-pendulous *ovula*.—*Capsule* depressed, divided toward its axis into four or five vertical, sub-ascending, oval, obtuse, unequal wings or lobes.

*Obs.* Notwithstanding some discrepancies between Kaempfer's figure and Thunberg's description I am strongly inclined to consider this tree as the genuine *E. japonica*; the more so, as I take that, which the last mentioned author mentions as *europaea*, to be the same as Roxburgh's *atropurpurea*.—Should I be mistaken in this supposition, the species before us might with propriety be called *pendula*, its outer branches hanging down in a very elegant manner.—N. W.

#### 6. *E. tingens*, Wall.

Arboreous, erect. *Leaves* thick and leathery, ovate-lanceolate;

serrulate, rugose above. *Calycine* laciniae persistent. *Petals* veined, furnished with a short claw. *Capsule* rounded, five-cornered.

Newar, Kasoori.

I have only found it on the summit of Sheopore where it blossoms in April, and ripens its capsules in September. Dr. Govan has found it on the Sewalik mountains, and Kamroop on those of Shreenugur.

A branchy tree, from sixteen to twenty feet high, with a trunk as thick as a man's thigh, covered with ash-grey bark, spotted with numerous large, spongy, ochre-coloured tubercles. The wood is like that of the first species.—*Branchlets* rather short and thick, round, but marked with four equidistant elevated lines; new shoots obscurely four-cornered. Both the *flower-buds* and the *branch-buds* consist of imbricated, lanceolate scales, fringed with capillary fibres, surrounding the tender branchlets, and here and there interspersed among the peduncles.—*Leaves* approximate, sub-decussate, from ovate to lanceolate, two or three inches long, sharply serrulate, acute at both ends, of a firm, leathery texture; dark-green and lucid, somewhat rugose above; very pale underneath, obscurely reticulate.—*Petiol* short. *Peduncles* short, flattened, twice or thrice dichotomous, disposed in numerous, approximate pairs on the young shoots, with opposite linear fringed bractlets at each sub-division.—*Flowers* large, yellowish-green, those in the dichotomies supported on a longer pedicel than the rest.—*Laciniae* of the *calyx* ovate, obtuse, ciliate.—*Petals* four or five, large, yellowish, most beautifully marked with purplish veins, ovate, furnished with a short claw.—*Stamina* four or five.—*Capsule* as large as a gooseberry, sharply four or five-cornered, retuse with a subulate point, supported by the lobed calyx; five-seeded.

*Obs.* The Nipalese employ the yellow bark for the purpose of marking the forehead with the idolatrous symbol, commonly called Tika.—N. W.



7. *E. fimbriata*, Wall.

*Leaves* ovate, finely acuminate, fringed with long, parallel, dentate, sharp serratures. *Flowers* sub-umbellate on long filiform peduncles. *Capsules* with from two to five, long, vertical, tapering wings.

Specimens of this beautiful species were communicated from the Sewalik mountains by Dr. Govan and from Shreenugur by Kamroop.

Probably a tree. *Branches* round, slender, grey; while young alternately compressed; all parts smooth. *Buds* axillary and terminal, oval, acute, consisting of ovate, obtuse, imbricating scales.—*Leaves* opposite, ovate, terminated by a lanceolar, long acumens; margins most elegantly marked with narrow, linear-lanceolate, sharp, slightly incumbent, parallel, and approximate serratures, which are two or three lines long, and sharply denticulate, or serrulate; base rounded, or acute, nearly entire; the lower surface with a strong rib and oblique nerves; from three to five inches long.—*Petiol* half an inch long, furrowed.—*Peduncles* lateral, approximate on the young shoots, filiform, a little flattened, two or three inches long, divided into five or six long, slender rays, each bearing a simple or compound fascicle of tetrandrous flowers.—*Calycine* segments oblong, obtuse.—*Stamina* very short.—*Capsule* large, turbinate, depressed, furnished with from two to five, lanceolate, tapering, vertical, horizontally spreading wings, which are sometimes two-thirds of an inch long, and as broad at the base as the capsule itself is deep.

*Obs.* It is impossible to confound this with any other species. While young the leaves are lanceolate, less deeply, but distinctly duplicato-serrate; when old they become broad ovate, elegantly fringed with numerous narrow, deep, dentate serratures. The capsules are large, and leathery.—N. W.

8. *E. grossa*, Wall.

*Leaves* sub-opposite, ovate, acute, obtusely and grossly serrate, on longish *petiols*. *Peduncles* dichotomous, with long divaricate divisions.

Found by my people on the mountains to the Northward of Sheopore, in flower in June.

A small tree, with ash-coloured, dotted *branches*. *Leaves* mostly opposite, sometimes sub-alternate, ovate, acute, grossly and obtusely serrate, rounded at the base, coriaceous, smooth and shining, elegantly reticulate underneath, with oblique approximate nerves; four inches long.—*Petiol* from half an inch, to an inch long.—*Peduncles* half the length of the leaves, filiform, flattened, twice dichotomous, the divisions long and divaricate, supported by a pair of opposite, lanceolate, acute *bractes*.—*Flowers* pentandrous, with oblong *petals*.—*Anthers* globular, didymous.—I have not seen the fruit.—N. W.

#### 9. *E. frigida*, Wall.

*Leaves* oblong, acuminate, serrulate. *Peduncles* filiform, three-flowered. *Capsules* ovate-rotund, with four-winged base; *wings* narrow, triangular, membranous.

My knowledge of this species is derived from a few fruit-bearing specimens which my collector gathered near Gosain-Than, in August.

It is reported to be a small tree. *Branches* covered with brown, striped epidermis; *branchlets* obscurely quadrangular.—*Leaves* as much as five inches long, finely serrate, ending in a long, entire acumen. *Petiol* very short.—*Peduncles* from the vestiges of the leaves, two inches long, divided into from one to three, half-inch-long *pedicels*.—The unripe capsule as large as a gooseberry, its wings quite membranous, vertical, disappearing towards its vertex, obtuse.—N. W.

#### 10. *E. indica*, Herb. Heyn.

*Leaves* lanceolate or ovate-lanceolate, acuminate, most entire. *Peduncles* one- or three-flowered. *Capsule* clavate, obtusely winged towards the apex.

Specimens are preserved in Dr. Heyne's hortus siccus.

*Branches* opposite, round, smooth; the upper ones slender, slightly quadrangular. *Leaves* from lanceolate to ovate-lanceolate, obtusely acuminate, attenuato-acute at the base, perfectly entire, leathery, three inches long, shining above, with a prominent rib and capillary nerves underneath. *Petiol* very short. *Peduncles* opposite, axillary, solitary, about twice as long as the petiols, bearing one or two flowers.—*Bractes* minute, lanceolate, opposite, below the middle of the one-flowered peduncle, or under the pedicels.—*Flowers* pentandrous.—*Petals* oval, ciliate. *Capsule* obovate-clavate, surrounded at the tapering base by the persistent calyx; retuse at the apex and furnished with five short, rounded, projecting wings.—N. W.

11. *E. dichotoma*, Herb. Heyn.

*Leaves* linear-lanceolate, acuminate at both ends, perfectly entire. *Peduncles* dichotomous at the apex. *Capsule* lengthened, clavate, five-lobed.

Specimens are preserved in Dr. Heyne's herbarium.

*Branches* very slender, opposite or dichotomous, the outermost slightly quadrangular.—*Leaves* narrow, sometimes linear-lanceolar, most entire, tapering and acuminate at both ends, smooth, two inches long, on short, channelled petio's.—*Peduncles* fasciated, filiform, one-third shorter than the leaves, two or three times dichotomous at the apex, bearing a number of small pentandrous flowers.—*Capsule* clavate, lengthened, tapering downwards, nearly an inch long; its vertex five-lobed, retuse; lobes short, rounded.

*Obs.* These two interesting species are much alike in foliage; the last described differs in having much narrower leaves, more numerous, dichotomous peduncles, but smaller flowers, and lengthened, five-lobed, but not five-winged capsules. In none of the specimens are the fruits ripe; I am therefore doubtful if they are genuine *Euonymi*, or ought to constitute a new genus.—N. W.

12. *E. echinata*, Wall.

Scandent and radican. *Leaves* ovate-lanceolate, serrate. *Pe-*

*duncles* filiform, axillary, several times dichotomous. *Capsules* armed with numerous prickles.

Grows wild in the mountainous forests of Nipal, especially on Sheo-pore. Flowering in March and April, fruit ripening in August.

This is a very large branchy shrub, climbing over trees and rocks, and radicant by means of dense capillary fibres. The *stem* is from two to four inches in diameter, covered with soft, spongy, yellow bark. *Branches* opposite, smooth, ash-coloured, sometimes rooting, four-cornered at the apex. *Buds* oblong, attenuate, consisting of ovate, imbricate scales, which continue after the branch has grown out, surrounding its base.—*Leaves* opposite, from lanceolate to ovate, acuminate, serrulate, with an acute or rounded base, from two to three inches long, firm and leathery, perfectly smooth, spreading, sub-decussated, approximate, dark-green, shining, with capillary, sub-transversal nerves, which unite in arches near the margin on the upper surface, pallid underneath.—*Petiol* very short.—*Stipules* no others than some very minute, fleshy, subulate scales on each side of the base of the petiol.—*Peduncles* filiform, axillary, opposite, considerably shorter than the leaves, smooth, flattened, twice or thrice dichotomous, with a flower in each bifurcation, and a pair of opposite, triangular, ciliate, withering *bractlets* under each sub-division.—*Flowers* small, pea-green, inodorous, short-peduncled, quadrifid and tetrandrous; that in the bifurcation on a longer pedicel. *Calyx* flat, with rounded, concave, recurved *lacinia*.—*Petals* orbicular, crenulate, a little veined, several times larger than the *lacinia*.—*Stamina* erect, somewhat shorter than the petals.—*Ovary* half sunk into the fleshy bottom of the calyx, obscurely four-sided, and four furrowed, with four cells, each containing two pendulous ovula. *Style* short. *Stigma* truncate.—*Capsule* pendulous, globular, yellow, smooth, about four lines in diameter, beset with numerous, spreading, subulate, short prickles, its vertex naked, crowned with a short style, the base retuse, half concealing the permanent, reflected calyx; four-celled, containing four

oblong, black *seeds*, which are almost entirely enveloped in a scarlet fleshy *arillus*.

*Obs.* This and the following are exceedingly alike in the inflorescence and leaves; but the fruit differs widely. The disposition of the nerves of the leaves seems also to differ; in the species just described they are nearly transversal, parallel, and uniting under the margins in reticulate arches, and more visible on the upper surface; in *E. vagans* they are very oblique, and very obscurely reticulate towards the periphery.—I have never observed the last mentioned species with a radicant stem or branches.—N. W.

### 13. *E. vagans*, Wall.

Climbing, shrubby. *Leaves* ovate-lanceolate, serrate. *Peduncles* filiform, axillary, dichotomous. *Capsules* globular, naked, unarmed.

It inhabits the same places as the last described, and produces flowers and fruit at similar seasons of the year. I have also found it in fruit on Cheesapani, in December.

A most extensive rambling and climbing shrub, with *stem*, *branches*, *leaves* and *flowers* exactly like those of the preceding species except in the points adverted to in the concluding observation.—The *capsule* smooth, unarmed, globular, four celled, four-seeded; *seeds* large, hidden within a fleshy scarlet *arillus*.

*Obs.* Gaertner has very justly observed in his matchless carpology, ii. 86, that there exists no generic difference between *Celastrus* and *Euonymus*, and I confess, that the two just described may perhaps with equal justice be placed under the former genus.—The wood of *E. vagans* is compact and fine grained.—I have brought with me a piece of the stem of a most gigantic climber belonging either to this species or very nearly allied to it, measuring full fifteen inches in circumference, marked with many parallel furrows and covered with spongy bark, grey on the surface and yellow within; the wood brown, soft, and perforated with small tubular cells like a ratan.—N. W.

### VENTILAGO, Gaert.

*Calyx* five-parted. *Corol* five-petalled. *Germ* hid in the crenulated flat nectary. *Style* two-cleft. *Samara* semi-supera, globose, long-winged, one-seeded. *Embryo* erect, with perisperm.

1. *V. Madraspatana*, Willd. *sp. i.* 1106. *Gaert. Carp. i.* 223. *t.* 49.

*Funis viminalis*, Rumph. *Amb. v.* 3. *t.* 2.

*Beng.* Ruktupita.

*Telinga.* Yerra chictali.

A very large climbing shrub; a native of forests and other uncultivated places, amongst the mountains; \* flowering during the cold season.

*Leaves* alternate, short-petioled, bifaricus, ovate-oblong, serrulate, smooth, except while young, then villous; from three to four inches long. *Panicles* terminal, composed of alternate, bifaricus, ramous, villous branches.—*Flowers* very numerous, small, greenish, smelling very strong and offensive.—*Calyx*, *corol*, *nectary*, *stamens*, and *pistillum* as in *Rhamnus Jujuba*.—*Capsule* (*Samara*) globular, size of a pea, surrounded near the middle with the remaining nectary, terminating in a long, linear, membranaceous wing, one-celled, not opening of itself.—*Seed* solitary, round.

*Obs.* This plant is generally dioicous. The smell of the flowers is very offensive, not unlike that of *Sterculia fetida*.

*Obs. by N. W.*

While young the stem and flexuose branches are striped with white lines, which elegantly contrast with the smooth green bark, not unlike what is observed in the beautiful *Acer striatum*.—In the hortus siccus of the late Dr. Heyne specimens are preserved of Willdenow's *V. dentata* (nov. act. berol. iii. 417); which I am supported by one of the very first authorities in botany in considering only as va-

\* Common in the north parts of Bengal. *Ed.*

rieties of *V. madraspatana* (See Sir J. E. Smith in Rees's cyclop. in loco).—*V. bracteata*, Heyn. also preserved in his herbarium, is very much like the former, and I am disposed to think that the round, sub-retuse, half-inch-long, villous, *floral leaves* are merely accidental.—In Sîlhet the climber is called *Panee Luta* (पाखोलता).—*Funis viminalis* of Rumphius is undoubtedly like a *Ventilago*; but it climbs by means of hooks, which ours does not.—N. W.

*HOVENIA*, Schreb. gen. N. 375.

*Calyx* five-parted. *Corol* five-petalled. *Germ* superior, three-celled; cells one-seeded; attachment inferior. *Style* three-cleft. *Capsule* trilocular. *Embryo* erect, with scanty perisperm.

1. *H. dulcis*, Thunb. japon. 101. Willd. spec. i. 1141.

Sicku, vulgò *Ken et Kenpökönas*, Kaempf. amoen. p. 808. t. 809.

A tree, a native of Nipal; from thence introduced by Dr. Buchanan into the botanic garden at Calcutta, where when eight years old, they began to blossom in April.

*Trunk* in our young trees straight and high, from ten to twelve feet to the branches; and twenty inches in circumferences, four feet above the earth. Total height about thirty feet.—*Bark* smooth, dark-brown. *Branches* spreading much, branchlets bifarious, round; *young shoots* hairy. *Leaves* alternate, short-petioled, cordate, acutely serrate, acuminate, three-nerved, smooth above, a little hairy underneath; from four to six inches long, by from two to four broad.—*Stipules* lanceolate, hairy, caducous.—*Cymes* axillary, rarely terminal, dichotomous, villous; *divisions* clavate.—*Flowers* numerous, small, white.—*Calyx* one-leaved, acetabuliform, inside hairy. *Border* five-parted; *divisions* ovate, reflexed.—*Petals* five, inserted within the fissures of the calyx, broad spatulate, sides incurved round the filaments.—*Filaments* five, longer than the petals, recurved. *Anthers* ovate.—*Germ* superior, ovate, three-celled, with one ovulum in each,

attached to the bottom of its cell. *Style* cylindric, apex three-cleft. *Stigmas* simple.—*Capsules* superior, round, size of a pea, thin, smooth, and brown, three-celled. The ramifications of the cyme are now, when the seed are ripe, much swollen, and variously bent, as represented by Kæmpfer, but the taste is simply astringent.—*Seed* solitary. *Integuments* two; exterior tough, thick, hard, and highly polished; interior membranaceous, and covered with a brown mealy substance.—*Perisperm* in small quantity, tough, dull, livid-white. *Embryo* erect, yellowish. *Cotyledons* orbicular. *Radicle* oval, inferior.

*Obs.* By Dr. Buchanan dated Katumanda, 10th and 14th November, 1802. “Munko-khoshee.\* A tree originally brought from “China or some country subject to it. The fruit is a capsule, containing three-seeds, and resting on an enlarged pedunculus, which “is soft, and contains a sweet juice. This does not come to maturity till after the capsules are ripe. Part of the seed now sent “in this parcel was brought from China, and part has ripened here. “There can be no doubt, from the singular nature of the peduncle, “that it is an *Hovenia*, *Thunb.* but whether or not his species, I “know not. It has hairy leaves and is reckoned the largest tree in “Nipal.”

*Obs. by N. W.*

This fine tree undoubtedly grows wild in the valley of Nipal at

\* The name here given as a Newar name is in the extract of Dr. Buchanan's letter written Mun Kokhosee, and is one, out of hundreds which might easily be produced, of the mistakes which constantly occur when persons unacquainted, in some measure at least, with the languages, set down words from the mouth of natives. Dr. Buchanan spoke only Hindoo-sthanee, and a Newar man gave him as a reply to a question, Munko Khooshee, a Hindoo-sthanee word which means *pleasure or delight to the mind*. This might be the Hindoo-sthanee word by which the tree is designated by the Nipalese, but it is much more probable the man only intended to say it was a *delightful tree*. The above-mentioned circumstance, and likewise the great number of native names of plants, seemingly obtained with the utmost ease by other gentlemen who have merely run through a country as collectors; (which however was not the case with Dr. Buchanan); added to the difficulty I have myself found in obtaining names, and the uncertainty of those commonly obtained, fully dispose me to coincide with the suggestion of my friend Wallich in his note at the foot of page 99. Ed.



Gokurna, Thoka, Shumbhoonath and as far as half way up Sheopore, on all which places I have found it in the forests, blossoming in May, and ripening its fruit in the rainy season ; it attains the size, which Kaempfer ascribes to it, of a middling pear tree, with a trunk from one to two feet thick. The wood is light, veined, greyish white ; the bark cinnamon-coloured. A sprig in flower with the imperfectly ripe fruit is represented in the very valuable Botan. Regist. vi. 500, under the name of *Hovenia acerba*, Lindl. which was afterwards very properly corrected to *H. dulcis*, and the mistake of the leaves having been represented entire, pointed out. *Ibid* vii. ad. calc. sub notis.—N. W.

*PITTOSPORUM*, Schreb. gen. N. 379.

*Calyx* five-leaved, deciduous. *Petals* five, germ superior, three-celled, cells many-seeded, attachment interior. *Capsule* three-celled, three-valved. *Seeds* many. *Embryo* centripetal, and furnished with a perisperm.

1. *P. Tobira*, R.

*Leaves* sub-verticilled, obovate, cuneate, entire, and lucid, apex circular.

*Tobira*, Kaempf. *amoenit.* 796. *tab.* 797.

From China this pretty shrub has been introduced into the botanic garden at Calcutta.

*GOUANIA*, Schreb. gen. N. 1592.

*Calyx* five-parted. *Corol* five-petalled. *Germ* three-celled, sunk in the saucer-shaped, five-horned nectary ; *cells* one-seeded, attachment inferior. *Capsule* inferior, three-celled, with a single seed in each. *Embryo* erect, and furnished with a perisperm.

1. *G. tiliaefolia*, Willd. sp. iv. 1000. Roxb. Corom. 1. N. 98.

Shrubby, climbing. *Leaves* cordate, serrulate, smooth. *Racemes* terminal, and axillary.

*Telinga*. Penki-tiga.

A large, climbing, woody shrub, a native of the Circar mountains.

*Tendrils* simple, small, generally from the lower part of the racemes.—*Leaves* alternate, petioled, cordate, slightly serrate, or crenulate, smooth, from two to four inches long.—*Racemes* terminal, and from the exterior axils, long, filiform.—*Flowers* numerous, small.—*Bractes* minute.—*Calyx* above, five-parted.—*Corol* as in *Rhamnus*.—*Nectary* the saucer-shaped part is here augmented by five emarginated, spreading horns.—*Filaments* inserted in the margin of the nectary, alternate with its horns.—*Germ* below, three-sided. *Style* three-cleft.—*Capsule* dry, triangular, three-celled, three-valved.—*Seeds* one in each cell.

*Obs. by N. W.*

I have found it abundantly in the lower part of Nipal, at Hētounra, and between that place and Bheempedi, climbing over large trees; with ripe fruit in November. It is also a native of Silhet, where it blossoms during the rains.—N. W.

2. *G. napalensis*, Wall.

Shrubby, climbing. *Leaves* oval, finely acuminate, rounded or acute at the base, seldom sub-cordate, villous and strongly ribbed underneath. *Petiols* glandular at the apex. *Racemes* very long, villous.

I have observed this shrub in Nipal on the high mountains of Sheopore, Chundrugiri, &c. flowering from June until October.

A very extensively climbing shrub with long, slender, striped, round branches beset with pretty copious, soft, rust-coloured, spreading hairs, especially while young.—*Leaves* ovate, sometimes cordate, more frequently rounded or acute at the base, terminating in a very long,

entire, linear, cuspidate-obtuse acumen, from four to six inches long, serrate: the lowermost serratures glandular, subulate, extending down upon the petiol, the rest becoming more and more obtuse, even retuse, as they approach the acumen; upper surface smooth, obliquely furrowed, the under one marked with copious approximate, parallel, oblique, elevated, villous nerves, and sub-transversal capillary veins; when young they are densely villous underneath.—*Petioles* slender, slightly furrowed, pubescent, from an inch to an inch and a half long, having towards its apex, above, a couple of subulate, evanescent, villous glands.—*Stipules* opposite, membranous, lanceolate, falcate, acute, one-third of an inch long, deciduous.—*Tendrils* terminal, or from the base of the racemes, simple, slender, villous, spiral, three inches long.—*Racemes* exceedingly long and slender, terminal and from the exterior axils, panicle, undivided, from six to twelve inches long, cylindric, densely villous, short-peduncled.—*Flowers* minute, fascicled, approximate, on very short pedicels.—*Petals* cuneate, obtuse, sub-fornicate, scarcely half so long as the alternating, triangular, calycine *lacrima*.—*Stamina* opposite to the petals, and alternating with the five teeth of a flat greenish *disc* or *nectary* which surrounds the ovary.

*Obs.* It is difficult to determine whether this may be considered as a distinct species, or only a variety of *G. tiliifolia*. The form and size of the leaves, the villosity of their under surface and especially of the inflorescence seem to indicate a specific difference; still I have my doubts on this subject.—The specimens which are preserved in the late Dr. Heyne's hortus siccus possess also a considerable villosity on the inflorescence.—N. W.

*ITEA*, Schreb. gen. N. 381.

*Calyx* five-toothed. *Petals* five, (four of which, with the *stamina* are inserted on the receptacle.) *Capsule* one-celled, two-valved, many-seeded. *Receptacles* lateral.

1. *I. umbellata*, R.

Shrubby. *Leaves* alternate, petioled, broad-lanceolate. *Panicles* axillary, and terminal, composed of long pedicelled, simple umbellets.

A native of the Malay Islands.

*Leaves* alternate, petioled, broad-lanceolate, entire, smooth, from six to twelve inches long.—*Petioles* from one to two inches long.—*Stipules* none.—*Panicles* axillary, terminal, and scattered amongst the leaves, composed of long pedicelled umbellets, which are sometimes proliterous.—*Flowers* numerous, pretty large.—*Bractes* minute, villous.—*Calyx* cup-shaped, five-toothed.—*Petals* five, lanceolate, obtuse, inserted, with the stamina round the base of the germ.—*Filaments* shorter than the corol, flat. *Anthers* sagittate.—*Germ* oblong, pedicelled, one-celled, containing many ovula, attached to two opposite, parietal receptacles. *Style* short and thick.—*Stigma* slightly two-lobed.—*Capsule* oblong, one-celled, two-valved.—*Seeds* several, affixed to the two parietal receptacles.

*Additional species by N. W.*2. *I. macrophylla*, Wall.

Smooth. *Leaves* elliptic-ovate, acuminate, with hooked serratures. *Racemes* axillary, fascicled, erect, equalling the leaves.

A native of the Khasee mountains, near Pundooa, a frontier village in the district of Silhet, where it was found in blossom in the month of June by Mr. De Silva, who communicated beautiful specimens.

Beng. Uchruleeyaja (অচলোয়াজা).

A middling-sized tree, smooth on all its parts.—*Branches* round, slender.—*Leaves* approximate, alternate, spreading, ovate or elliptic, acuminate, strongly marked with incurved, hooked, unequal, cuspidate serratures, which become more remote at the rounded base; coriaceous, smooth and shining underneath, with oblique, sub-opposite nerves, running out to the margin, where they are much bent, and

with most numerous, parallel, capillary, transversal veins, as in *Ventilago madraspatana*; from six to ten inches long.—*Petiols* about an inch long, slenderish, furrowed above.—*Stipules* none.—*Racemes* axillary, erect, slender, cylindric, three or four together in a fascicle, rarely solitary, equalling the leaves in length, ebracteate, many-flowered, sometimes with a branch or two at the base.—*Common peduncle* from half an inch to two inches long, pubescent and a little angular as is also the *rachis*.—*Flowers* numerous, approximate, two or three fascicled, yellow, fragrant, equalling their *pedicels*; the latter are naked, sub-clavate, three lines long. *Æstivation* conical, valvate.—*Calyx* very small, divided into five, somewhat remote, subulate *laciniæ*.—*Corolla* pentapetalous, much longer than the calyx, between and within the *laciniæ* of which it is inserted; *petals* linear-lanceolate, acuminate, about three lines long, reflected upon the pedicel, broadish at the base.—*Stamina* five, erect, equalling the petals and alternating with them; *filaments* subulate, inserted below and opposite to the calycine *laciniæ*; *anthers* ovate, erect, bilocular.—*Ovary* sub-turbinate, semi-inferior, two-celled; that part which is above the bottom of the calyx is conical, divided by two opposite furrows so as to appear almost double, and surrounded by a fleshy, obscurely five-lobed, convex *disc*; the lower part is turbinate; *ovula* numerous, imbricate, ascending, attached to the septum. *Style* rather shorter than the filaments, columnar, erect, obscurely two-furrowed. *Stigma* fleshy, capitate.—*Fruit* not seen.—N. W.

### 3. I. ? *fragrans*, Wall.

*Leaves* opposite, cuneate-lanceolate, entire. *Raceme* terminal, with tetrandrous, or pentandrous, sub-sessile flowers. *Ovary* inferior.

Native of the island of Singapore, where I found it in blossom in October.

A branchy shrub, five or six feet high. *Branches* round, with brownish, smooth bark, sub-opposite, while young villous.—*Leaves* approximate, opposite, lanceolate, rather broader towards their upper end, hence sub-cuneate, cuspidate-acuminate, most entire, attenu-

ated downwards, acute at the base, smooth, and shining above, with a few scattered hairs underneath, nerves sub-transversal, curved, uniting in sub-marginal reticulate arches; three inches long.—*Petiol* short, round, villous, slightly furrowed.—*Stipules* none.—*Spike* terminal, erect, cylindric, slender, longer than the leaves, measuring four or five inches in length, villous on all its parts, resting on a short peduncle which, together with the rachis is villous, rather angular.—*Flowers* yellow, exquisitely fragrant, fascicled, generally ternate, approximate, sub-sessile, spreading, pubescent on the outside.—*Calyx* very small, cup-shaped, with four or five, triangular, acute teeth; supported by one or two linear bractlets.—*Corolla* with four or five petals, infundibuliform; during æstivation it is cylindric, obscurely four-cornered, valvate; about four lines long; *petals* linear, acute, conniving below, spreading from the middle upwards, pubescent on both sides.—*Stamina* four or five, alternating with the petals and a little shorter than they, erect; *filaments* fleshy, filiform, with a few scattered hairs on the inner side; *anthers* erect, oblong, two-celled, at length slightly recurved.—*Ovary* inferior, ovate, very small, villous, two-celled; *ovula* numerous attached to the partition, ascending. *Style* columnar. *Stigma* broadish, truncate.

*Obs.* This is a very elegant, delightfully fragrant shrub, of the proper place of which I am very doubtful, not having seen the seed vessel. Its inferior ovary is no obstacle to its belonging to the family of *Saxifrageæ* of which *Itea* is a member; but I suspect that it belongs to a different genus.—N. W.

### DALRYMPLEA, Roxb.

*Calyx* five-leaved. *Petals* five, alternate with the stamina. *Germ* superior, three-celled, cells many-seeded; attachment of the ovula inferior. *Berry* three-celled. *Seeds* few, nuciform. *Embryo* subinferior, and furnished with a perisperm.

In memory of the late Alexander Dalrymple, Esq. author of the *Oriental Repertory*, &c.

1. *D. pomifera*, R.

*Junki jam* the vernacular name in Silhet where it is a native, and grows to be a large tree. Flowering in March and the seed ripening in September and October.

*Young shoots* rather succulent, round, and perfectly smooth.—*Leaves* opposite, unequally pinnate, some of them ternate; from ten to twenty inches long. *Leaflets* three or four pair, and a terminal one, the pairs opposite, all more or less petiolate, oblong, obtusely serrate, acuminate, smooth, from five to six inches long, by two or three broad.—*Petioles* and *petiolets* round, and smooth.—*Panicles* terminal, spreading much, more broad than long, primary branches decussate; partial ones alternate with the small yellowish white flowers, which are crowded round their extremities; every part smooth.—*Bractes* to the primary branches of the panicle opposite, as in the *Rubiaceæ*; the rest solitary under each division and sub-division.—*Calyx* inferior, five-leaved; *leaflets* rather unequal and oval.—*Petals* five, oblong, obtuse, spreading. *Nectary* acetaliform.—*Filaments* five, alternate with the petals, and shorter than they, inserted under the nectary. *Anthers* ovate. *Germ* superior, three-lobed, indeed almost separable, three-celled; *ovule* about eight in each cell, widely attached to the axis. *Style* length of the germ, three-grooved. *Stigma* three-lobed.—*Berry* drupaceous, having the appearance of a pome, of a roundish, three-lobed form, very fleshy, when ripe yellow, and almost smooth, size of a large medlar, three-celled.—*Seeds* several in each cell, shape various, the most common roundish, reniform and considerably compressed, attached to the partition. *Integument* single, thick and of great hardness, in fact a perfect nut, exterior surface brown and highly polished. *Perisperm* conform to the seed.—*Embryo* obliquely inferior. *Cotyledons* cordate, three-nerved. *Radicle* oval, obliquely centrifugal,

*Obs. by N. W.*

I have found this tree, or one coming very near it, rather common in Nipal, both in the great valley and in the mountains in that vic-

nity, flowering in April and May ; it grows also wild in the warmer valley of *Noakote*, attaining a height of sixteen to twenty feet, with a moderately thick stem, covered with whitish soft and spongy bark. The wood is light, of a dull grey colour, and not employed for any specific purposes.—The leaves and flowers are somewhat smaller than those of the *Silhet* tree ; but otherwise they seem to agree. A specific distinction may, perhaps, hereafter be established ; at present I am not prepared to venture an opinion on this subject. The Newar name is *Phurasee* and *Jeegna*.—N. W.

*CEDRELA*, Schreb. gen. N. 383.

*Calyx* five-toothed. *Corol* five-petalled. *Capsules* five-celled, five-valved. *Seeds* several in each cell, winged and imbricated on a pentagonal receptacle. *Embryo* inverse, perisperm scanty.

This genus is very nearly related to *Swietenia*, the chief marks of distinction appear to me to be the number of stamina, viz. in *Cedrela* five, inserted on five nectarial glands which embrace the base of the germ ; in *Swietenia* ten, inserted into the mouth of a sub-cylindrical nectarium, which embraces the whole of the pistillum. In both the seed vessels, and seeds are very exactly alike.

1. *C. Toona*, R.

*Panicles* pendulous. *Leaflets* from six to twelve pairs, lanceolate, entire, acute.

Surenus, *Rumph. amb.* iii. 66. t. 39.

*Sung.* तुन्नः, *Toonna* तुन्नकः, *Toonnuka*, कुणिः, *Kooni*, तुणिः, *Tooni*, तुणिकः, *Toonika*, तूणी, *Toonee*, तूणीकः, *Tooneeka*, कुवेरकः, *Kooveruka*, कुच्छः, *Koochha*, कुच्छकः, *Koochhuka*, कान्तः, *Kanta*, कान्तलकः, *Kantuluka*, नन्दिदृक्षः, *Nundivriksha*, नन्दकः, *Nanduka*, आपीतः, *Apeeta*, पातकः, *Patuka*, दन्तो, *Duntee*.

*Beng.* Toon, Tood.



This most elegant, large timber tree is now found common in Bengal, probably brought thither originally from the mountainous parts of the Northern, and North East frontier. | *Leaves* deciduous during the cold season, appearing again with the flowers in February. *Seed* ripe in May and June.

*Trunk* erect, growing to a great size and height, though I have only seen small trees about Calcutta. *Bark* smooth, grey. *Bran-ches* numerous, forming a large, beautiful, shady head.—*Leaves* alternate, abruptly pinnate, drooping, from twelve to eighteen inches long. *Leaflets* from six to twelve pairs, opposite or nearly so, short-petiolated, obliquely lanceolate, the upper half broadest, and extending further down the petiolet than the lower; margins waved, smooth on both sides, tapering to a long acute point; from two to six inches long.—*Petioles* and *petiolets* round and smooth.—*Stipules* none.—*Panicles* terminal, nearly as long as the leaves, pendulous, composed of numerous, diverging, compound ramifications, smooth in every part.—*Bractes* minute, deciduous.—*Flowers* very numerous, small, white, and possessing a fragrance like that of fresh honey.—*Calyx* five-parted.—*Petals* five, oblong, with the margins ciliate, the apices incurved over the stamens, and keeled on the inside near the base.—*Nectary* consisting of five, large, hairy, orange-coloured glands, sitting round the lower half of the germ.—*Filaments* erect, inserted into the centre of the five nectarial glands, rather shorter than the petals. *Anthers* bent in towards the stigma.—*Germ* superior, oblong, internal structure and contents as in the capsule. *Style* length of the corol. *Stigma* large, flat, composed of five lobes.—*Capsules* oblong, rather larger than a field bean, smooth, five-celled, five-valved; valvelets opening from the apex and falling off with the seeds.—*Seeds* numerous, imbricated, both the ends and the exterior side membrane-winged, affixed to the upper end of the sharp ridges of the receptacle, &c. exactly as in *Swietenia febrifuga*, and *Mahogani*; See *Gaert. carp.* ii. 89. t. 96.—*Perisperm* in very small quantity, and more like a fleshy interior integument.—*Embryo* inverse. *Cotyledons* oval, three-nerved. *Radicle* obliquely superior.

The wood of this tree is much like mahogany, but lighter, consequently not so close in the grain. It is much used for furniture and various other purposes. The bark is a powerful astringent, and though not bitter is a tolerable good substitute for *Peruvian Bark* in the cure of remitting and intermitting fevers; particularly when joined with a small portion of the powdered seed of *Cesalpinia bonducella*, (*Kutkulegi* of the Bengalees), which is a most powerful bitter.

*Obs. by N. W.*

In Nipal I have found this noble tree at Goukurna, and on Sheopore, just above the temple at the foot of that mountain, called Bala-Neelkuntha. It grows also at Noakote. Time of blossoming the month of May.—The *petiols* and the *new shoots* are covered with copious, glaucous, separable pubescence. The axils of the nerves are excavated and villous on the under surface of the leaflets. The *panicles* are shorter than the leaves and not pendulous. *Stamina* six; sometimes increased by a *seventh* barren filament. *Ovary* slightly pubescent, five-celled; *ovula* many, attached to the axis.—This may perhaps prove a distinct species, though I doubt it; in that case it might be called *C. hexandra*. Its wood is of a beautiful chocolate colour, precisely like the common Toon so universally employed for chairs, tables, and cabinet furniture.—*C. Toona* has been described in *Roths nov. spec.* 162.—N. W.

*CAMUNIUM, Rumph.*

*Calyx* five-toothed. *Petals* five. *Nectary* globular, apex perforated, inside staminiiferous. *Germ* superior, one-celled, from one to two-seeded; attachment of the ovula superior.

1. *C. chinense, Rumph. amb. v. 28. t. 18. f. 1.*

An elegant shrub, most probably a native of China, at least it has

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been brought to the botanic garden at Calcutta from Canton, under the name Sam-yeip-lan, where it blossoms during the hot season, and the early part of the rains in June and July, but has not yet shown any tendency to produce fruit.

*Stem* in our young, small plant trifling, but many branches and branchlets rising and spreading in every direction. *Bark* of the old ligneous parts olive grey; of the *young shoots* green, with their very tender apices clothed with stellate ferruginous scales.—*Leaves* alternate, petioled, ternate and unequally pinnate.—*Leaflets* rarely more than five, the pairs opposite, and much smaller than the terminal one, all oblong, but tapering most toward the base, smooth, deep green, entire, obtuse; from an inch and a half to four inches long, and from half an inch to two inches broad.—*Petiols* somewhat winged, and channelled.—*Panicles*, sometimes only *racemes*, axillary, solitary, shorter than the leaves.—*Flowers* minute, yellow, faintly fragrant.—*Bractes* ovate, one embracing the insertion of each pedicel.—*Calyx* flat, five-toothed; teeth semilunar.—*Petals* five, oval, concave, at all times pressing on the nectary, smooth, much longer than the calyx. *Nectary* sub-globular, mouth contracted, and slightly five-toothed.—*Filaments* scarcely any. *Anthers* five, cordate, attached to the nectary near its base on the inside.—*Germ* superior, oblong, hairy, one-celled, with one or two seeds, which are attached to the top of the cell. *Style* none. *Stigma* large, conical.

*Obs. by N. W.*

The following judicious observation on this charming shrub is extracted from my dear departed friend Jack's second botanical paper contained in Malayan Misc. i. 33.

"The *Camunium sinense* of Rumph. v. t. 18. f. 1, which is commonly met with in gardens in all the Malay Islands, is quite a distinct genus from the other two *Camuniums*, and has been described by Loureiro, in Fl. Cochinch. i. p. 773, under the name of *Aglaia odorata*. It has a five-parted inferior *calyx*, and five-petalled *corolla*. The

*stamina* are five in number, and are inserted in the manner of the *Meliaceæ* on the inside of an ovate *nectarial tube*, which is contracted at the mouth, and conceals the anthers. The *stigma* is large, sessile, simple as far as I have observed, not double as stated by Loureiro. The ovary appears to be one-celled, and to contain two pendulous ovula. It rarely ripens its fruit in these Islands, but according to Loureiro it bears a small, red, one-seeded berry. The flowers are very small, yellow and fragrant, in small axillary panicles.—In the *Hortus Bengalensis*, p. 18. this plant is specified under the name of *Camunium sinense* after Rumphius. The *Muraya paniculata* above described is the true Kamuning of the Malays, and the name *C. sinense* is only applied by Rumphius in the manner of the older botanical authors, as one of comparison and resemblance for want of a better of native origin; if therefore the generic name *Camunium* is to be adopted at all, it ought to be applied to the plant to which it really belongs, and cannot be admitted for one of a different family, not indigenous to the Malay Islands. On this account Loureiro's name is to be preferred."—N. W.

*Additional species by N. W.*

2. *Aglaia* ? *decandra*, Wall.

Arboreous. *Leaves* pinnate, with as far as six pairs of oblong, acuminate *leaflets*, with semi-cuneate base. *Panicles* axillary, pubescent, equalling the leaves in length, consisting of long, simple racemes, of globular, long-peduncled, decandrous flowers. *Fruit* five-seeded.

I have found it rather sparingly on Nag Urjoon and Sheopore in Nipal, flowering in May, and with unripe fruit in July.

A very large spreading tree, with a thick trunk, covered with pretty smooth, grey bark.—*Branches* thick, round, marked with vestiges of the insertion of the fallen leaves, greyish, callous, dotted, pubescent, while young villous, as are also the leaves. *Leaves* alternate, approximate, spreading, about a foot long, pinnate with an odd leaflet,

seldom terminating abruptly. *Common petiol* two or three inches long, swelled at the base, obscurely angular above, as well as the thickish, rounded rachis clothed with copious, soft pubescence. *Leaflets* membranous, opposite, from four to six pairs, oblong, attenuato-acuminate, unequal at the base, one side being shorter and acute, the other rounded and broader, on very short villous petiols; entire, slightly waved, pubescent on both sides, with a few transparent dots, shining above, pallid underneath; nerves alternate, sub-transversal, arcuate towards the margin and slightly reticulate; the outermost pair from six to eight inches long, the rest gradually decreasing, the lowermost ovate, scarcely above two inches long.—*Stipules* none.—*Panicles* axillary towards the ends of the branchlets, oblong, equalling the leaves in length, naked, pubescent, consisting of numerous, simple, alternate, slender, cylindric racemes, about six inches long, of numerous, globular, yellow, fragrant, perfectly smooth *flowers*, which scarcely exceed a pepper-corn in size. *Peduncle* round, as long as the petiol; *rachis* slender; *pedicels* half an inch long, clavate, supported by a small, fleshy, subulate *bractlet*, and bearing one or two others about their middle.—*Calyx* flat, very small, deeply divided into five obtuse, gland-ciliate, ovate segments.—*Petals* five, much larger than the calyx, imbricate, conniving over the nectary, round, obtuse, fleshy, concave, sessile, their sides a little unequal, becoming somewhat spreading after impregnation has taken place. *Nectary* fleshy, yellow, globular, a little shorter than the corolla, antheriferous within, its base almost entire under the ovary, the mouth contracted but pervious, obtusely five-toothed. *Anthers* ten, sessile, concealed within the nectary, fleshy, ovate, longitudinally two-celled, erect, obtuse; five of them more elevated, inserted into the base of the crenatures; the other five attached to five small tubercles in the lower part of the nectary, alternating with the upper row.—*Ovary* fleshy, small, supported by the nectary, roundish, from three- to five-celled, cells one-seeded; *ovulum* attached to the axis. *Style* none. *Stigma* fleshy, a little below the mouth of the nectary, four or five-cornered.—I have only seen the unripe fruit, which is disposed in pendulous racemes, and

seems to indicate a *drupaceous berry*. It is smooth, fleshy, of an obovate figure, about as large as a cherry, five-furrowed, obscurely five-lobed, retuse at the apex and marked with the rudiment of a minute, sessile, stellate stigma; base cuneate, supported by the almost unaltered calyx; five-celled, five-seeded. *Seed* oblong, attached to the middle of the axis, completely enveloped in a fleshy arillus.—The *external integument* brown, very thick becoming perhaps bony, smooth and shining, marked on the inner side, or that opposite the axis of the fruit, with a sharp, longitudinal *raphe*, running from one extremity of the seed to the other.—*Inner integument* soft, becoming probably membranous. There seems to be no *perisperm* present; the *cotyledons* are large and fleshy and the *radicle* minute, and superior.

*Obs.* This is an extremely beautiful tree, especially when in flower, when it perfumes the air with an exquisite fragrance, very like that of *Aglaia odorata*, but stronger. The wood is grey and not close-grained, nor is it used by the natives. The structure of the flowers differs only from that of the above species in being decandrous; the fruit is decidedly five-seeded. I have not had any opportunity of examining the latter in a ripe state, and have therefore preferred placing the tree here, to forming it into a new genus. Should it prove the latter, the name which I originally gave to it, *Sphaerosacme*, might be adopted.—*Roxburgh's Milnea* is exceedingly like the above two plants, and they all belong to the family of *Meliaceæ*.—N. W.

### 3. *A. ? polystachya*, Wall.

Arboreous. *Leaves* pinnate, with a few pairs of oblong acuminate, leaflets, with unequal base. *Panicles* axillary, smooth, shorter than the leaves, consisting of numerous, long, simple racemes, of ovate, sub-sessile, pentandrous flowers.

A native of Silhet and from thence communicated by Mr. De Silva; blossoming during the rains.

*Beng.* Bandoor-pala (বান্দুপলা).

A large forest tree. *Branches* round, thick, covered with small callous dots, pubescent while young; all the tender parts covered

with glaucous tomentum.—*Leaves* as in the last tree, but larger, of a more leathery texture and quite smooth, as are also the petiol and rachis; the former of these is marked above with an elevated line. *Panicles* ample, one-third shorter than the leaves, smooth; *racemes* very long, slender, many-flowered. *Pedicels* exceedingly short, supported by a minute, divergent bractlet.—*Flowers* pale-yellowish, ovate, smaller than of the preceding, but much larger than those of Roxburgh's *Milnea edulis*.—*Anthers* five, very large, entirely filling the cavity of the crenate *nectary* and inserted to its base.—*Ovary* very small. *Stigma* sessile.

*Obs.* Not having seen the fruit I am unable to decide on its proper genus; but it seems evidently to be cognate with the last described tree.—N. W.

### MILNEA, Roxb.

*Calyx* five-parted. *Petals* five. *Nactary* urceolate, with the five anthers round its inside. *Germ* three-celled, cells from one- to two-seeded, attachment centripetal, no perisperm.

In honour of Colin Milne, LL. D. author of a botanical Dictionary, Institutes of botany, and other works.

#### 1. *M. edulis*, R.

A tree of middling size, a native of the Garrow hills and of the Silhet district, where it is called *Gumi* by the natives, who eat the large succulent aril which surrounds the seed under the cortex of the berry. Flowering time June and July. The fruit ripens two or three months afterwards.

*Young shoots* densely clothed with dark brown down, when more advanced smooth.—*Leaves* alternate, unequally-pinnate, from six to twelve inches long. *Leaflets* from three to six pair, sub-opposite, petiolate, lanceolate, entire, smooth but not lucid, obtusely-acuminate, from three to six inches long, by one or two broad.—*Stipules* none.—*Petioles* cylindric, somewhat villous.—*Panicles* one from

each of the lower axils, nearly as long as the leaves, very ramous and spreading; like the young shoots very downy.—*Flowers* numerous, minute, caducous.—*Bractes* very minute, caducous.—*Calyx* five-parted, small, downy on the outside; segments rounded.—*Petals* five, oval, concave. *Nectary* urceolate, rather shorter than the petals, mouth five-toothed.—*Filaments* five, very short, inserted on the inside of the bottom of the belly of the nectary. *Anthers* sagittate, and completely hid in the nectary.—*Germ* semi-superior, three-celled; cells with one or two ovula attached to the axis. *Style* short and thick. *Stigma* turbinate, truncate, six-grooved.—*Berry* round-oval, rather more than an inch in diameter, three-celled, containing seldom more than one fertile seed, most of the ovula being in general abortive. *Cortex* firm, rather dry, covered with a rough, brownish grey mealiness.—*Seed* solitary, oval, inserted in a complete thick, fleshy, lucid, edible aril, like that of the Lichee of China. *Integument* single, brown, adhering more firmly to the aril than the seed.—*Perisperm* none.—*Embryo* transverse. *Cotyledons* conform to the seed, equal with the surface, furrowed. *Corculum* transverse, hairy. *Radicle* short, pointing to the umbilicus.

*Obs. by N. W.*

In the Hon. Company's botanic garden it blossoms in the rainy season, but has as yet not produced fruit. The leaflets attain sometimes nine or ten inches in length and are marked with minute pelucid dots. The panicles are supra-decomposite, beset with copious, loosely adhering, *stellate* tomentum.—N. W.

*ELÆODENDRUM*, Schreb. gen. N. 385.

*Corol* five-petalled. *Germ* two-celled, two-seeded; attachment inferior. *Drupe* superior, oval. *Nut* two-celled. *Embryo* erect, without perisperm.



1. *E. glaucum*, Persoon. *Synops.* ii. 241. Roxb. *Corom.* ii. 2.

*Leaves* opposite, oblong, serrate. *Panicles* axillary, dichotomous. *Drupe*s spherical.

*Schrebera albens*, Willd. *spec.* i. 1092.

*Celastrus glaucus*, Vahl. *ymb.* ii. 42.

*Mangifera glauca*, Rottb. in *Nov. Act. Havn.* ii. 534. t. 4. f. 1.

A middle-sized, or rather small tree, native of various parts of India. From Ceylon it was received into the botanic garden at Calcutta, under the name Ceylon tea; its leaves are like those of that plant but much longer; their taste slightly bitter and astringent. It flowers in May; the seeds ripen in September and October.

*Trunk* straight. *Bark* in young trees, smooth, and olive-coloured. *Branches* numerous, spreading in every direction, and forming a very dense, oval head; *young shoots* round, and smooth.—*Leaves* opposite, short-petioled, oblong, and cuneate-oblong, sometimes very acutely, and sometimes obtusely serrate; texture hard, with both surfaces polished, the upper shining; apex rather obtuse, and always bent down, from three to four inches long, and about two broad.—*Stipules* a minute scale on each side of the inside of the base of each short, polished petiole.—*Panicles* axillary, shorter than the leaves; all its divisions dichotomous and divaricate.—*Flowers* pedicelled, small, greenish yellow.—*Bractes* small, oblong, from one to three, at the base of each pedicel, and at the divisions of the panicle.—*Calyx* of five, somewhat unequal, round, concave, caducous leaflets.—*Petals* five, expanding, linear-oblong, sessile.—*Nectary* a green, pentagonal, fleshy, scalloped gland, in which a great part of the germ is immersed.—*Filaments* five, inserted on the nectary, scarcely half the length of the petals; at first nearly erect, but by age becoming so much revolute as to bring the roundish, two-lobed *anthers* under the calyx.—*Germ* superior, immersed in the very large, green, fleshy nectary, two-celled, with two ovula in each, attached to the bottom of their cells. *Style* short, conic. *Stigma* simple, obtuse.—*Drupe* nearly round, size of a large cherry, smooth, pulpy, when ripe olive-coloured, one-celled. *Nut* oval, rather more acute

at the apex than at the base, a little rugose, with two grooves on the opposite sides; uncommonly thick, and hard; two-celled, though one is often abortive.—*Seed* solitary, very rarely two, oblong, more convex on the inside. *Integument*; there seem two, rather spongy.—*Perisperm* none.—*Embryo* erect. *Cotyledons* conform to the seed, amygdaline. *Plumula* minute, two-lobed. *Radicle* oval, inferior, and lodged close to the umbilicus.

2. *E. indicum*, Gaert. carp. i. 274. t. 57.

Arboreous. *Leaves* opposite, obovate-oblong, obtuse, remotely serrulate. *Panicles* axillary, small, dichotomous. *Drupe* and *nut* oblong.

Rubentia, Jussieu. *Genera. plant.* 416.

A middling-sized tree, a native of the Mauritius, where it is called *Bois d' Olive*. Flowers in May and June, and the seeds ripen in October.

*Obs. by N. W.*

This is *E. orientale*, Jacqu. ic. rar. i. t. 48.—It was introduced in 1813 from the Mauritius into the Hon. Company's botanic garden at Calcutta, where it blossomed for the first time in April 1820, and has continued ever since doing so in the hot season. The leaves vary much according to the age and station of the tree, and even the age of the branch, from linear, acuminate, to broad-oval, or sub-obovate, obtuse, which latter form they have on young luxuriant shoots, and then they are very lucid and marked with gland-cuspidate small serratures. The inflorescence nearly like that of the first species.—N. W.

### MANGIFERA, Schreb. gen. N. 387.

*Calyx* five-leaved, or five-parted. *Corol* from four- to five-petalled; *Germ* one-celled, ovulum single, attachment lateral. *Drupe* superior, reniform. *Embryo* sub-erect, without perisperm.

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1. *M. oppositifolia*, R.

*Leaves* opposite, lanceolar, acuminate. *Panicles* terminal. *Stamina* from four to five, all fertile.

Meriam, the vernacular name at Rangoon in Burma, where the tree is indigenous, and grows to the general size of a small apple tree in England. The wood is somewhat red, hard, close-grained, and said to be very durable. Flowering time the month of March, fruit ripe in June and July.

*Branches* and *branchlets* smooth and green.—*Leaves* opposite, short-petioled, lanceolar, polished, obtusely acuminate; from four to six inches long, and from one to two broad.—*Stipules* none, but the scales of the bud remain for some time at the base of the young shoots.—*Panicles* generally terminal, shorter than the leaves, oblong, rather dense; *ramifications* opposite, smooth in every part.—*Bractes* ovate, acute, caducous.—*Flowers* numerous, minute, pale-yellow.—*Calyx* from four- to five-parted, segments rounded.—*Petals* four or five, oblong, a keel down the middle on the inside.—*Filaments* four or five, short, alternate with the petals. *Anthers* ovate with an obtuse point.—*Germ* obliquely ovate, one-celled, and containing one ovulum attached to the side of the cell, under the perforation of the stigma. *Style* scarcely any. *Stigma* of three, very unequal lobes, one of which is much more elevated and much larger; between it and the lower and smaller lobes, the channel may be traced.—*Drupe* sub-ovate, a little compressed, smooth, pale-yellow, the size of a small pullet's egg, one-celled, like the mango the pulp is yellow, and universally eaten in Burma.—*Nut* oblong, &c. in every respect like that of the common mango, but much smaller, thin, and of a soft texture, easily cut, fibrous on the outside, smooth on the inside, chesnut-coloured, one-celled, evalvular.—*Seed* solitary, conform to the nut. *Integument* no other than the nut could be observed.—*Perisperm* none.—*Embryo* erect. *Cotyledons* conform to the seed, oblong, fleshy. *Plumula* pointed, curved up, two-lobed. *Radicle* inferior, conic, transverse.

Obs. by N. W.

This is a tree of extremely slow growth; at least it has proved itself such in the Hon. Company's botanic garden, where it was introduced fourteen years ago and has not reached ten feet in height; nor has it yet flowered (1823).—N. W.

2. *M. indica*, Willd. spec. i. 1150. Vahl. en. pl. i. 7. Corom. pl.

Leaves lanceolate. Panicles terminal. Flowers with one fertile stamen.

Mao, du. Mau, vel. Mangas, Rheed. mal. iv. 1. t. 1. 2.

Manga domestica, Rumph. amb. i. 93. t. 25.

Sung. आम्रः, Amra, सहकारः, Suhukara, चूतः, Choota, रसालः, Rusala.

\* Var. 1. कामाङ्गः, Kamanga, मधुदूतः, Mudhoodoota, माकन्दः, Makunda, पिकवल्गुभः, Pikuvullubha, कामशूरः, Kamushura, कामवल्गुभः, Kamuvullubha, किरिष्टः, Kireesta, माधवद्रुमः, Madhuvudrooma, भृङ्गाभोष्टः, Bhiringabheesta, सीधुरसः, Seedhoorusa, मधुलिन्, Mudhoolin, कोकिलोत्सवः, Kokilotsuva, वसन्तदूतः, Vusuntudoota, अम्लफलः, Umluphula, मोदाख्यः, Modakhya, मन्मथालयः, Munmuthalaya, मध्वावासः, Mudhwavasa, सुमदनः, Soomuduna, प्रियावः, Priyava, कोकिलावासः, Kokilavasa, पिकरागः, Pikuraga, नृपप्रिया, Nripupriya.

2. राजाम्रः, Rajamra, राजफलः, Rajuphula, स्मराम्रः, Smuramra, कोकिलोत्सवः, Kokilotsuva, मधुरः, Mudhoora, कोकिलानन्दः, Kokilanunda, कामेष्टः, Kamesta, नृपवल्गुभः, Nripuvullubha. Vulg. राजाम्बा, Rajamba, the royal mango.

3. महाराजचूतः, Maharajuchoota, महाराजाम्रकः, Maharajamruka, स्थूलाम्रः, Sthoolamra, मन्मथावासः, Munmuthabasa, टङ्कः, Tan-

\* The Sungskrit writers mention five sorts of mangos, one of which is probably *M. sylatica*, under which the names are given; the other varieties of *M. indica* are inserted above.

ka, नीलकपित्थकः, *Neelukupitthuka*, कामायुधः, *Kamayoodha*, कामफलः, *Kamuphula*, राजपुत्रः, *Rajupoottra*, नृपात्मजः, *Nripat-muja*, महाराजफलः, *Muharajuphula*, कामः, *Kama*, महाचूतः, *Muhachoota*. Vulg. महाराजाम्ब, *Muharajamba*, the imperial mango.

4. वज्ररसालः, *Vuhoorusala*, चक्रालुताम्र, *Chukralootamra*, मध्वाम्रः, *Mudhwamra*, असितजाम्रकः, *Usitujamruka*, वन्यज्यः, *Vunyujya*, मन्मथानन्दः, *Munmuthauunda*, मदनेच्छफलः, *Mudunechhaphula*. Vulg. वज्ररसालुमहाराजांबु, *Vuhoorusaloo muharajambo*, the delicious imperial mango.

*Beng. Am.*

*English. Mango.*

*Telinga. Mamadi-chitoo.*

*Tam. Mangas marum.*

Of this tree, though one of the most common in India, I have not yet met with any description which deserves the name.

It is universally cultivated all over India, and all the warmer parts of Asia. Is generally raised from seed, though sometimes by layers, or grafting by approach, which are the only methods of certainly continuing a good sort, probably of improving them. The stones must be sown soon after they are taken from the fruit, otherwise they do not vegetate, but there is no depending on the quality of the fruit so raised. The seed of a very superior sort will produce fruit of a bad kind; and vice versa, hence such an infinite variety. Colonel Kyd in Bengal, and Dr. Anderson at Madras, have lately begun to graft by approach; which will no doubt be a means of improving this excellent fruit. Flowering time January, February, and March; the fruit is ripe in May, June, and July.

The tree grows to be of a very great size, with an erect trunk, covered with dark-coloured, scabrous, cracked bark; (large old trees of from ten to fifteen feet in circumference are meant.)\* *Branches* very numerous, the lower ones spreading horizontally to a great extent,

\* A grove of that size is before my door, and a most noble sight it is.

the upper ones gradually ascending till they become nearly erect in the centre.—*Leaves* alternate, petioled, about the extremities of the young shoots, approximated, reclined, lanceolar, entire, often a little waved at the margins, firm, smooth, shining; generally from six to twelve inches long, and from two to three broad.—*Petiols* round, smooth, from one to two inches long, thickish at the base.—*Stipules* none.—*Panicles* terminal, large, erect, or ascending, rigid, a little downy, often tinged with red.—*Pedicels* short, thick, rigid.—*Bractes* oval, concave, a little downy.—*Flowers* small, yellow, with some stripes of red near the base of the petals, many perfect male flowers are often found mixed with the hermaphrodite ones throughout the panicle.—*Calyx* five-leaved; *leaflets* oblong, concave.—*Petals* five, lanceolate, spreading, twice the length of the calyx.—*Nectary* five, large, yellow, fleshy bodies surrounding the base of the germ, forming as it were, an excavated, five-lobed receptacle for it to sit in, each of the lobes as large as the germ itself.—*Filament* single, subulate, ascending, half the length of the petals, inserted between the lower lobe of the nectary and the germ. *Anther* oval, purple. Besides these there are generally two, three, four, or more, very minute, sterile filament-like bodies, issuing from the apices of the lobes of the nectary.—*Germ* obliquely oval, one-celled, and containing a single ovulum, attached to the side of the cell, opposite to the fertile stamen, and under the style.—*Style* from the side of the germ, length of the stamen, subulate, declining, so as to bring the *stigma* which is small, and incurved nearly to touch the anther.—*Drupe* obliquely oblong, or kidney-formed, also a little compressed like a kidney, fleshy, smooth, when ripe yellow, size various, but in general about as large as a goose egg.—*Nut* conform to the *drupe*, but more compressed, woody, one-celled, two-valved, covered on the outside with many fibrous filaments, particularly on the worst sorts.

It is by no means necessary for me to mention that the ripe fruit of this tree, (when of a good sort,) is universally eaten, and esteemed the best fruit in India. Jellies, preserves, tarts, pickles, &c. are made of them before ripe.

The kernels are large, and seem to contain much nourishment, however they are made no use off, except during times of scarcity and famine, they are then boiled in the steam of water, and used as an article of diet.

The wood is of a dull grey colour, porous, yet pretty durable if kept dry, but soon decays if exposed to wet. In very large old trees it acquires a light chocolate colour towards the centre of the trunk, and larger branches. This is hard, closer grained, and much more durable.

From wounds made in the bark, there issues a soft, reddish, brown gum resin, which age hardens, and renders exceedingly like Bdellium. Laid on the point of a knife and held in the flame of a candle, it readily melts, catches flame, and burns with a cracking noise; emitting a smell exceedingly like that of *Cashew nuts* when roasting. It softens in the mouth, and adheres to the teeth. Its taste is slightly bitter with some degree of pungency. It dissolves almost entirely in spirits, and in a great measure in water, both solutions are milky with a small tinge of brown.

*Obs. by N. W.*

The mango does not succeed in the great valley of Nipal; but at Noakote it thrives well and produces tolerably good fruit. I met with a tree, growing seemingly wild near Hetounra, on the banks of the Karra or Karrara rivulet, which I take to be the common mango. It was not in flower.—N. W.

3. *M. sylvatica*, R.

*Leaves* alternate, lanceolar, glossy. *Panicles* terminal. *Flowers* monandrous. *Drupe* obliquely conic, with the pointed apex turned one side.

*Sung.* कोशाम्रः, Koshamra, घनखन्धः, Ghunuskundha, वनाम्रः, Vunamra, जन्तुपादपः, Juntupadupa, क्षुद्राम्रः, Kshoodramra, रक्ताम्रः, Ruktamra, लाक्षावृक्षाः, Lakshavriksha, सुरक्षकः, Sooruktuka. *Vulg.* भरोआंबरा, Jhureeamra.

Lukshmee am, the vernacular name in Silhet; on the mountains adjoining to that district it grows to be a tall tree of great size. Flowering time October; the fruit ripens in February and March, and is eaten by the natives, though by no means so palatable as even a bad domestic mango, they also dry them and keep them for medicinal purposes.

*Leaves* as in the common cultivated sorts, alternate, petioled, lanceolar, entire and smooth; from six to eight inches long, by one and half or two broad.—*Panicles* terminal, much larger than in the domestic sorts, and with the numerous ramifications more erect and slender.—*Flowers* very numerous, small, white, with a faint shade of pink; they are more completely monandrous than any of the cultivated sorts.—*Calyx* five-leaved, many times shorter than the corols.—*Petals* five, linear, spreading, and finally becoming somewhat twisted and revolute.—*Nectary* a short, solid, turbinate, slightly grooved, villous receptacle for the germ to rest on. In the domestic sorts it is composed of five distinct glands, which embrace the base of the germ.—*Filament* single, inserted into the pot of the nectary, incurved, length of the pistillum. *Anther* oval. *Germ* elevated on the above-mentioned nectary or receptacle, unequally oval, smooth, one-celled; *ovulum* single, attached to that side of the cell from whence the style rises, and most remote from the stamina. *Style* subulate, length of the filament, incurved, after fecundation recurved. *Stigma* simple, acute.—*Drupe* ovate, obliquely acuminate, smooth, when ripe yellow, like the common mango and nearly as large, one-celled. *Nut* oblong, less fibrous than in the common sorts, and also less firm, with an even surface.—*Seeds* solitary, conform to the nut. *Integument* single.—*Perisperm* none.—*Embryo* between erect and transverse. *Cotyledons* equal, conform to the seed. *Radicule* lodged between the cotyledons on one side of their base, pointing out, and rather upward.

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*Additional species by N. W.*4. *M. quadrifida*, Mss. Jack.

" *Leaves* lanceolate with attenuate base. *Panicles* loose, axillary. *Flowers* quadrifid, monandrous, *Petals* glandular at the middle.

*Malay.* Assam Kumbong.

Sumatra and other islands of the eastern Archipelago.

A loftier tree than the common Mango, with a straighter trunk, and more compact foliage. *Leaves* alternate, long-petioled, lanceolate, acute, attenuated to the base, very entire, smooth, coriaceous and flat. *Petioles* roundish, somewhat thickened at the base. *Stipules* none. *Panicles* lax, open and spreading, axillary, crowded at the summits of the branches. From two to four panicles generally come out just below the thick termination of the branch, each supported by a leaf. Sometimes there are other panicles below these from the axils of the lower leaves. *Flowers* small and white. *Bracts* small, deciduous. *Calyx* four-leaved, somewhat reflex. *Corolla* white, four-petalled, spreading, after flowering conniving, petals ovate-lanceolate, acute, furnished in the middle with an irregular, yellow, glandular rest. *Nectary* of four, round, fleshy lobes united into a cup-like receptacle, on which the germen is situated. *Stamina* inserted on the lobes of the nectarium, not within them as in the *M. Indica*. One fertile, as long as the corolla, sterile filaments very short. *Germen* oblique. *Style* declinate, as long as the stamen. *Fruit* roundish, becoming very dark-coloured, containing an ovate rent.

There are generally some male flowers in the panicle, and rarely a flower occurs with a small superfluous fifth petal placed within the rest.—W. Jack.

5. *M. foetida*, Loureir.

*Leaves* firm, broad-lanceolate. *Panicles* terminal, ascending, lengthened, smooth. *Flowers* sub-monandrous. *Corols* infundibuliform; *limb* spreading, at length reflexed.—Mss. Jack.

*Manga foetida*, Rumph. Amb. i. 98. t. 28.

Malay. Bachong.

A native of Pinang, Sumatra, &c.

A larger tree than the common mango. *Leaves* very firm and rigid. *Panicles* large and red-coloured. *Stamina* inserted on the lobes of the nectarium, one, sometimes two fertile. *Fruit* very foetid, eaten by the Malays."—W. Jack.

Obs. by N. W.

This tree is very common at Pinang. It has larger flowers than any of the other species and may at once be recognised by that character.  
—N. W.

6. *M. caesia*, Jack.

*Leaves* rigid, broad-lanceolate, attenuate at the base. *Panicles* terminal, erect, tomentose, glaucous. *Flowers* monandrous. *Petals* erect. *Fruit* oblong.—Mss. Jack.

Malay. Binjaee.

Sumatra.

A large tree. *Branches* rough with the vestiges of the fallen leaves. *Leaves* fifteen or sixteen inches long, alternate, petiolate, broad-lanceolate, acuminate, tapering to the base and decurrent on the petiole, very entire, smooth, thick and rigid, strongly nerved, the middle rib flattened. *Petioles* short. *Panicle* large, erect, terminal, finely tomentose, of a glaucous reddish-colour. *Bracts* small. *Calyx* erect, slightly tomentose. *Corolla* erect, purple within, paler without. *Nectary* small, slightly lobed. *Stamina* on the nectary, one fertile. *Style* oblique. *Fruit* oblong-obovate, of a reddish white colour."—W. Jack.

### HARPULLIA, R.

*Calyx* five-leaved. *Corol* five-petalled, alternate with the stamina. *Germ* two-celled, cells one-seeded; attachment of the ovula sub-su-

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perior. *Capsules* two-celled. *Seed* solitary, arilled. *Embryo* with incumbent cotyledons, and lateral radicle without a perisperm.

1. *H. cupanioides*, R.

*Harpulli* the vernacular name at Chittagong.

A small tree; a native of the hilly parts near Chittagong, it flowers in April; and the fruit ripens in July.

*Trunk* straight. *Branches* few, and tending to be erect also; *bark* ash-coloured; *young shoots* smooth.—*Leaves* alternate, abruptly pinnate, from twelve to eighteen inches long. *Leaflets* from four to six pair, short-petiolate, from alternate to opposite, from ovate below to lanceolar above; all are entire, and smooth on both sides; apex considerably pointed; from three to six inches long, by one or two broad.—*Petioles* round and smooth.—*Panicles* axillary, solitary, erect, thin of branches, and shorter than the leaves.—*Flowers* small, pale yellow.—*Bractes* subulate.—*Calyx* inferior, five-leaved, permanent; *leaflets* oval.—*Petals* five, lanceolate, obtuse, spreading, becoming recurved.—*Filaments* five, alternate with the petals, and much shorter. *Anthers* oblong.—*Germ* ovate, hairy, somewhat two-lobed, two-celled, with one pendulous ovulum in each attached to the upper end of the partition. *Style* short. *Stigma* two-lobed; *lobes* reflex, adnate.—*Capsules* pendulous, orbicular, two-lobed, considerably compressed, villous, two-celled, two-valved, opening all round. *Partition* opposed to the valves. The whole very exactly resembling the capsule of *Gelonium cupanioides*, Gaert. carp. ii. 271. t. 139.—*Seed* solitary, semi-oval; the inner side being straight, the exterior rounded, arilled. *Integument* single, rather thin, smooth, chesnut colour. *Aril* deep orange, covering the whole seed from the base except the apex.—*Perisperm* none.—*Embryo* green. *Cotyledons* two, conform to the seed, incumbent, their line of separation being nearly through the middle of the seed, which makes them equal. *Radicle* on the exterior or convex side of the seed, apex rather acute, and turned up into a small hollow in the uppermost cotyledons, so that it points to the apex of

the seed. After it has lengthened a little by the progress of vegetation, the two-lobed *plumula* is very conspicuous.

*Obs. by N. W.*

It was introduced into the Hon. Company's botanic garden at Calcutta by Mr. J. Roxburgh, in 1810, and has since grown to be a very elegant tree, of about thirty feet in height, with a rather slender trunk. It blossoms in the hot and rainy seasons. The young shoots as well as the petioles are of a pale glaucous-green colour, a little furfuraceous; while quite tender the former are covered with dense ferruginous down. *Leaflets* elegantly pendulous, somewhat waved, slightly folded, as far as ten inches long, gradually decreasing downwards. *Base of the petiol* remarkably thick and ventricose; apex furnished with a small subulate, ferruginous, downy, deciduous process. *Partial petioles* about one-third of an inch long, cylindric, with a narrow channel above. *Stipules* none. *Panicles* oblong, lengthened and slender, at first erect, afterwards nodding in an elegant manner, from fourteen to sixteen inches long; *peduncle* round, slender, slightly enlarged at the base, which is inserted on the branch a little above the axilla; its branches short, alternate, remote, bearing a few roundish short-pedicellate flowers. *Bractes* linear-lanceolate, half an inch long, foliaceous, pubescent; those under the flowers linear-subulate, covered with soft, pale, ferruginous down, as are also the pedicels and calyces: they are all deciduous. *Æstivation* globular, imbricate.—*Calycine segments* very obtuse, unequal: the outer three being rather larger. *Corolla* smooth, white, sub-infundibuliform, a little longer than the calyx, with a short tube and recurved limb. *Petals* obscurely unguiculate, alternating with the calycine laciniae, sub-retuse. *Filaments* subulate, somewhat sunk into the flat, fleshy, villous, faveolate disc, which occupies the bottom of the flower; *anthers* erect, fleshy, with two longitudinal cells.

This genus belongs most probably to the family of *Sapindaceæ*, and as has been remarked by Roxburgh comes very near to *Gelonium*.

of Gaertner and Aubert du Petit. Thouars, humorously called *Tina* by Dr. Schultes in *systema veget.* v. p. xxxii. in imitation of *Quisqualis* of Rumphius, (not of Linneus, as stated in that most valuable work).—N. W.

### NEERIJA, R.

*Calyx* five-leaved. *Corol* five-petalled. *Style* simple. *Berry* superior, one- or two-seeded.

#### 1. *N. dichotoma*, R.

*Telinga*. Neerija.

A middling-sized tree, a native of the mountains of Coromandel. Flowers about the beginning of the hot season.

*Trunk* erect. *Bark* rust-coloured, scabrous. *Branches* numerous, spreading in every direction. *Branchlets* opposite, round and smooth. — *Leaves* opposite and alternate, petiolate, oval and oblong, serrato-crenate, smooth; about four inches long, and two broad; texture hard. — *Petioles* round, three-quarters of an inch long. — *Panicles* axillary, globular, thin, throughout dichotomous, with the divisions standing at right angles. — *Peduncles* three times the length of the petioles, round, smooth. — *Flowers* small, yellow, not very numerous. — *Calyx* five-leaved; *leaflets* orbicular, unequal, caducous. — *Petals* five, oblong, spreading. — *Nectary* a large, fleshy, pentagonal ring surrounding the base of the germ, into its angles the filaments are inserted. — *Filaments* five, shorter than the petals, spreading. — *Anthers* two-lobed. — *Germ* superior, conical. *Style* shorter than the stamens, thick. *Stigma* simple. — *Berry* oblong, succulent, red, smooth, one-celled. — *Seeds* one, or two.

Is nearly allied to *Elæodendrum glaucum* in habit, but in that the drupe with a single, very thick, hard nut will alone be sufficient to distinguish them.

The fresh bark of the root, rubbed with plain water, is by the natives applied externally to remove almost every sort of swelling. It is a very strong astringent, possessing scarcely any other sensible quality.

*VARECA*, Gaert.

*Calyx* five-leaved, or five-parted. *Corol* five-petalled. *Germ* superior, one-celled; *ovula* numerous, their attachment parietal. *Berry* one-celled. *Seeds* a few, inserted on the three parietal receptacles.

1. *V. moluccana*, R.

*Leaves* alternate, lanceolar. *Peduncles* axillary, many-flowered. *Filaments* free.

A small tree, from fifteen to twenty feet in height, a native of the Molucca islands, and from thence introduced into the botanic garden at Calcutta, in 1798, where it blossoms in October and November, and again in March, April, and May; but has not yet, though now fourteen years in Bengal, produced even well-formed fruit, so that the genus is still doubtful.

*Trunk* erect. *Branches* numerous, between erect and patent. *Bark* of the old parts smooth, and ash-coloured; of the young shoots with a little, short, ferruginous pubescence.—*Leaves* alternate, about the end of the branchlet, short-petioled, lanceolar, entire, waved, acute, smooth, and glossy above; from four to twelve inches long, and from one to four broad.—*Stipules* none.—*Peduncles* axillary, solitary, about an inch long, many-flowered, villous.—*Flowers* middle-sized, white, inodorous, pedicelled.—*Bractes* small, caducous.—*Calyx* one-leaved, five-toothed, villous, caducous.—*Petals* five, linear-oblong, recurved, many times longer than the calyx.—*Filaments* five, inserted on the receptacle, shorter than the germ, and pressing upon it. *Anthers* sagittate.—*Germ* superior, oblong, torulose, villous, one-celled, with many ovula, attached to two or three, parietal receptacles. *Style* short. *Stigma* pretty large, two- or three-lobed.

2. *V. lanceolata*, R.

*Leaves* alternate, lanceolar. *Flowers* in axillary fascicles.

An erect, shrubby plant, a native of Pulo Pinang.

*Leaves* alternate, bifarious, short-petioled, lanceolate; *veins* numerous, simple and parallel: smooth on both sides.—*Stipules* within the leaves, lanceolate, chaffy.—*Flowers* small, numerous, collected on short-peduncled, axillary, compound corymbs, pale yellow.—*Calyx* five-leaved; *leaflets* oval, concave, permanent.—*Petals* five, lanceolate, expanding, permanent.—*Filaments* five, shorter than the petals, incurved, united at the base into a ring round the lower half of the germ. *Anthers* arrow-shaped, erect.—*Germ* superior, ovate, hairy. *Style* longer than the stamens, hairy. *Stigma* simple.—*Capsules* three-lobed, leathery, one-celled, evalvular.—*Seeds* several, affixed to three, vertical, parietal receptacles, on the inside of the middle of the lobes of the capsules.

*Obs. by N. W.*

I have specimens belonging probably to this plant, which were collected at Pinang by W. Jack who, in a Mss. note says: "I am at a loss what to make of this shrub. I thought it might be a *Vareca* (according to Roxburgh) but the *capsule* is one-celled, *three-valved*, with parietal placentæ; the *calyx* five-leaved; *corolla* five-petalled; *stamina* five, with filaments united at the base in an annular tube surrounding the ovary."—I venture to say it is certainly not a *Vareca*, and I even doubt whether any of the other species recorded above belong to that genus.—*V. heteroclita*, blossoms freely every year, but has never shewn the least disposition to produce fruit.—N. W.

3. *V. heteroclita*, R.

Shrubby. *Leaves* broad-lanceolar, crenate. *Flowers* axillary, crowded, sessile.

A small shrub, received into this garden from General Martin at Lucknow. Blossoms in October.

*Stem* short and slender; *bark* smooth, ash-coloured. *Branches*

bifarious, slender, all spreading nearly horizontally.—*Leaves* alternate, bifarious, sessile, cuneate-lanceolar, crenate, smooth on both sides; in the axil of each vein on the underside is a remarkable hollow gland.—*Stipules* ensiform.—*Flowers* axillary, crowded, sessile, small, white.—*Calyx* of five, unequal, imbricate, woolly, margined leaflets.—*Petals* five, lanceolate, confined at the base, by the rigid leaflets of the perianth, into a bell shape; above they are revolute and smooth on both sides.—*Filaments* five, long, and slender, projecting considerably beyond the mouth of the bell-shaped part of the corol, at the base each side is enlarged with one or more adjoined hornlets which are bearded at the base.—*Germ* superior, ovate, somewhat three-sided. *Style* as long as the stamens, villous; *stigma* simple. In the germ are the rudiments of two, three, or four seeds.

*VIOLA*, Schreb. gen. N. 1364.

*Calyx* five-leaved. *Corol* five-petalled, irregular, calcarate. *Anthers* united. *Capsules* superior, three-valved, one-celled. *Seeds* many, parietal. *Embryo* furnished with a perisperm; *radicle* centrifugal.

1. *V. suffruticosa*, Willd. spec. i. 1171.

Perennial, diffuse. *Leaves* alternate, sub-sessile, lanceolate. *Stipules* subulate. *Peduncles* axillary, with two bractes near the middle. *Corol* resupine. *Capsules* round.

A native of the sandy lands about Madras.\* In the botanic garden at Calcutta it continues in flower and seed most part of the year.

*Stem* scarcely any, but many diffuse, perennial, round, smooth branches, often extending to a foot in length.—*Leaves* alternate, sub-sessile, lanceolate, slightly serrate, pretty smooth, about an inch long,

\* It is very common in the fields from Nedeeya to Moorshudabad, and probably in most other parts of Bengal. Ed.



and a quarter of an inch broad.—*Stipules* small, subulate.—*Peduncles* axillary, solitary, one-flowered; shorter than the leaves, jointed above the middle, where there are two small bractes, one on each side.—*Calyx* five-leaved. *Leaflets* nearly equal, lanceolate, acute.—*Petals* five, rosy, the two upper ones smallest, linear-oblong, and pointed; the two lateral ones sub-ovate, with long, taper, recurved apices; the lower one (here the corol is resupinate,) much larger than the others, broad-cordate, supported on a claw as long as the superior petals, which is protruded behind, between the two lower leaflets of the calyx, into a gibbous nectary.—*Filaments*; the two lower ones have each a ciliate hornlet projecting back. *Anthers* with brown, ovate, scariose apices.—*Capsules* nearly round, size of a pea; one-celled, three-valved.—*Seeds* several in each cell, attached to a ridge which runs along the inside of each valve, obovate. *Integument* single, thin, striated.—*Perisperm* conform to the seed, white. *Embryo* three-fourths the length of the perisperm, greenish. *Cotyledons* oval. *Radicle* sub-cylindric, pointing to the umbilicus, at the small end of the seed.

2. *V. enneasperma*, Willd. spec. i. 1171.

Perennial, rather diffuse. *Leaves* lanceolate. *Corol* with little or no horn behind.

*Nelam. parenda*, Rheed. mal. 9. t. 60. rather a bad figure.

3. *V. primulifolia*, Willd. spec. i. 1162.\*

Annual, stemless. *Leaves* from triangular- to lanceolar-cordate; serrate, decurrent. *Flowers* resupinate; in that position the lower petal is broader, and emarginate.

Native of the interior parts of Bengal; in the botanic garden at Calcutta it blossoms and ripens its seed more or less the whole year.

\* *V. primulifolia* is a native of America. Whether this be the American plant I know not, but I doubt its being a native of Bengal. Dr. Roxburgh received it from a gentleman then resident at Moorshudabad which is all the authority he had for considering it indigenuous here: it certainly does not differ from the next species; all the species I know produce apetalous flowers except at one season of the year, when the flowers are perfect. Ed.

4. *V. apetala*, R.

Annual, stemless. *Leaves* broad-cordate, sagittate, serrate lobes, and apex rounded, in luxuriant plants the scapes are many-flowered. *Flowers* diandrous, and very generally without a corol.

Received from the Mauritius into the botanic garden in Bengal, where it is in constant flower and seed the whole year.

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*Additional species by N. W.*

5. *V. serpens*, Wall.

Covered with reflexed short pubescence. *Stems* simple, prostrate, stoloniferous. *Leaves* ovate-cordate, acuminate. *Stipules* fringed. *Flower stalks* erect, simple, shorter than the leaves. *Calyx* acute. *Corolla* resupinate, nodding; *lowermost petiol* lanceolate, smaller than the rest.

A native of Nipal, where it inhabits moist and shady places on most of the hills about the great valley, blossoming and ripening its seeds successively from March till June. In the botanic garden it has succeeded very well on raised, well drained, beds of masonry, filled with gravelly soil.

*Root* slender, perpendicular, cylindric, a little branchy. *Stems* numerous, very slender, round, simple, more or less purple, from one to two or more feet long, at first somewhat prostrate, creeping, and stoloniferous from the axils of the leaves; together with the petiols and peduncles beset with copious, short, reflexed, erect, afterwards roughish hairs.—*Leaves* alternate, remote, erect, ovate-cordate, acuminate, obtusely serrate, the serratures rather prominent on the upper surface, margins gibbous, lobes of the base rounded, approximate, separated by a deep, entire sinus, pubescent on both sides, dark-green, rugose above; nerved, veined, and from five- to seven-nerved underneath; those near the root about three inches long, the rest gradually smaller.

E c c

—*Petiol* as long as the leaf, even, gently furrowed above. *Stipules* opposite, lanceolate, membranous, pale-green, three or four lines long, smooth, fringed with numerous subulate, sub-glandular toothlets; base simple. *Peduncles* filiform, solitary, axillary, a little longer than the petiol, erect, round, bent at the apex; above the middle there are two linear, subulate, opposite or sub-alternate bractlets with ciliate bases. — *Flowers* small, resupinate, nodding, white with a feeble blue tinge, scentless. *Leaflets* of the *calyx* lanceolate, acute, ciliato-denticulate, half the length of the petals; their base peltate, slightly concave, truncate, and crenulate, that of the lowermost pair a little broader. The *upper petal* is by inversion lateral or lowermost, smaller than the rest, lanceolate, acute, marked with deep-coloured violet veins, equalling its straight, compressed, obtuse spur, which descends between the sepals and is longer than their bases. The other *petals* white, lanceolate-oblong, obtuse, bearded above with short, sub-capitellate hairs. — *Anthers* distinct; their membranes broad. The appendices of the lowermost pair greenish.

*Obs.* This elegant species approaches a little to *V. adorata* and *canina*; it differs by its elongated prostrate habit, its hairiness, and the colour and smaller size of the flower, which are shorter than the leaves. It approaches also to *sarmentosa* of Marschal, but differs by the form and comparative smoothness of the leaves, and the lanceolate, not subulate sepals. — N. W.

#### 6. *V. canescens*, Wall.

Stemless, the whole plant covered with copious glaucous pubescence. *Leaves* cordate-reniform, blunt. *Stipules* fringed with long ciliæ. *Flower stalks* erect, longer than the leaves. *Calyx* acute. *Corolla* resupinate.

I have only found this species on mount Nag-Urjoon in Nipal, flowering in March.

*Root* short, cylindric, persistent? with dense capillary fibres. *Stem* none. — *Leaves* broad-cordate, sub-reniform, obtuse, serrato-crenate, an inch and a half or two inches long, covered with glaucous pu-

bescence on both sides, with rounded, by no means decurrent lobes and a broad sinus, beneath five-nerved, and veined.—*Petiol* erect, twice or thrice longer than the leaf, furrowed, villous.—*Stipules* opposite, radical, erect, linear, acuminate, fringed with long ciliæ, reddish at the base.—*Peduncles* radical, erect, generally longer than the petiols, sometimes equaling them, slender, villous, one-flowered, bearing a pair of alternate linear *bractlets* about the middle. *Flower* small, nodding, inodorous, pale violet.—*Sepals* linear, acute, pubescent, obscurely trinerved: those near the spur denticulate, with truncate, crenulate base; the rest entire with an acute base; the uppermost two slightly recurved.—*Petals* nearly thrice as long as the calyx, obtuse; the *upper two* cuneate, puberulous at the base; two *lateral* ones rather narrower, bearded at the base, on its inside, sub-unguiculate, marked with a dark, undivided nerve. The lowermost shorter than the rest, oblong, very little pubescent above, marked with radiating dark veins, and terminating in a short, obtuse, compressed spur.—*Anthers* large, broad-lanceolate, white, membranous, imbricating. The *appendices* of the lowermost filaments very long, descending, ciliate, greenish.—*Ovary* ovate, purplish, covered with headed villi.—*Style* complanate, whitish.—N. W.

### 7. *V. reniformis*, Wall.

*Stems* decumbent, fleshy. *Leaves* pubescent, kidney-shaped, serrate, the lowermost long-petioled; the uppermost short-petioled. *Stipules* toothed. *Calyx* simple, linear, one-half shorter than the subulate spur.

I have found this in moist places towards the summit of Sheopore in Nipal, blossoming in June.

A very elegant, somewhat succulent species.—*Stems* round, slender, pallid, sparingly beset with short, hyaline, spreading hairs, marked with two narrow, opposite margins, mostly undivided, prostrate, from six to twelve inches long; their ends ascending. *Leaves* broad-reniform, obtuse, remote, of a very pale-green, acutely and

gibbously serrate, ciliate, a little hairy on both sides, chiefly along the ramifications of the vessels, somewhat decurrent on their petioles; from seven- to nine-nerved, dotted with glands when held towards the light; the lowermost remote, long-petioled, an inch long by two broad; the rest proportionably smaller, short-petioled, of a more cordate form and acutish. *Petioles* slender, fleshy, round, the lowest fully six inches long, the rest gradually shorter, until they become scarcely half so long as their leaves.—*Stipules* smooth, broadlanceolate, oblique, sub-adnate and gibbous at the base, with one or two acute, broad teeth.—*Peduncles* several, solitary, axillary, one-flowered, erect, equalling, or longer than the petioles, with a couple of very minute alternate *bractlets* about the middle.—*Flowers* smallish, yellow, sweet-scented. *Calycine leaflets* linear, acuminate, ciliate, with simple bases.—The *lowermost petal* obovate, much broader than the rest, which are cuneate, ending in a cylindric, slender spur which is nearly twice as long as the calyx.

*Obs.* This elegant species has some affinity to *Viola biflora* (Flor. Dan. i. t. 46), but differs, among other things, by its decumbent habit, hairiness and long spur.—N. W.

*S. V. glandulifera, Wall.*

*Stems* erect, very slender. *Leaves* broad-reniform, dentate, hairy, dotted with glands underneath; the lower ones shorter than the petioles, the uppermost much longer. *Peduncles* axillary, as long or longer than the petioles. *Stipules* ovate, entire, glandular. *Spur* very short.

A native of the frigid regions of Gosain-Than, where it blossoms in July.

*IMPATIENS, Schreb. gen. N. 1365.*

*Calyx* two-leaved. *Corol* five-petalled, irregular. *Nectary* cucullate. *Anthers* united. *Germ* five-celled, cells many-seeded, at-

tachment central. *Capsules* superior, five-celled, five-valved. *Seeds* numerous. *Embryo* naked, with centripetal radicle.

1. *I. Balsamina*, Willd. spec. i. 1175.

*Leaves* lanceolate, serrate. *Peduncles* one-flowered. *Nectary* shorter than the flower.

Tilo-Onapu, *Rheed. mal.* ix. 101. t. 52.

Beng. Doopati.

Hind. Gool-mendee.

Obs. by N. W.

I have found this well known plant, or one very closely allied to it on Chundrugiri and at Thankote. At first I thought it a distinct species and called it *I. glandulifera*. Its stem is fleshy, thick, jointed, branchy, pale-green, at length brownish, a little pubescent towards the top. *Leaves* alternate, very close together, narrow-lanceolate, acuminate, serrate, each serrature ending in an ascending cuspis, about three inches long, a little pubescent above, smooth, and pallid underneath, on *petiols* half an inch long, furnished on each side of the furrow with a pair or two of sessile, concave, fleshy *glands*. *Peduncles* axillary, geminate, one-flowered, pubescent, a little longer than the *petiols*; when fruit-bearing reflexed.—*Flowers* large, pale purple, a little pubescent on the outside. *Calyx* lanceolate, acute, ciliate, very caducous. *Petals* precisely as in the *Balsamina*. *Spur* incurved, becoming straight at length.—*Capsule* villous.—*I. coccinea*, Sims's Bot. Mag. xxxi. 1256 seems to me scarcely to be different from the plants described above.—N. W.

2. *I. tripetala*, R.

*Leaves* alternate, opposite and tern, broad-lanceolar, serrate. *Peduncles* from one- to many-flowered. *Corol* three-petalled; horn of the ample *nectary* hooked.

A native of the mountains near Silhet, where it flowers and ripens

its seed more or less the whole year round. *Rheedes Tilo-Onapu* is, I think, more like this than it is to *I. Balsamina*, though quoted for that species; and I can scarcely conceive this to be that plant in its original wild state.

*Root* annual, fibrous.—*Stem* erect, swelled at the leaves, scarcely pubescent in any respect. *Branches* opposite, several pairs, and generally below the middle of the plant; whole height from one to two feet.—*Leaves* on the stem opposite, and tern; on the branches often alternate, long-petioled, broad-lanceolar, serrate, a little hairy, particularly the serratures; about  $\frac{1}{2}$  inches long, by one broad.—*Flowers* axillary, from one to many, in the latter case their long pedicels are inserted on a very short, common peduncle.—*Perianth* of two, small, bracte-like leaflets.—*Corol* three-petalled; the upper one forming a roof over the interior part of the whole flower; *lateral* pairs composed of two, large, roundish lobes each; the lower lobes thereof forming the lip. *Nectary* large, with a hooked or incurved slender horn from its obtuse end.—*Stamina*, &c. as in the genus.

It has a pretty appearance when in full blossom, the flowers being numerous, large, and of a lively red colour, with the nectary deeply tinged yellow.

*Obs. by N. W.*

A drawing of this species made under the superintendence of my excellent friend Dr. F. Hamilton, and named by him *I. ternifolia*, is preserved at the Hon. Company's botanic garden at Calcutta, where the plant thrives well, blossoming in August and September. It is branchy, fleshy, sub-diaphanous, besprinkled on most parts with a few short, hyaline hairs.—*Leaves* often five inches long, on very slender naked *petiols*, equalling half or one-third their own length, and having at their base on each side of their axils a small fascicle of subulate, herbaceous glands.—The fascicles of flowers always shorter than the petiols.—*Corolla* large, scarcely two-lipped, the inner lobes of the lateral petals being considerably elevated above the nectary, and forming the sides of the throat.—The *galea* is

broad, sub-reniform, its back convex, somewhat keeled, and furnished with a short, conical, curved horn. *Lateral petals* large and protruding; their inner margin uneven, and inserted by means of a short hooked claw; the outer one two-lobed, lobes rounded, pretty equal in size.—The fourth petal or nectary is pubescent, beautifully veined, somewhat contracted near the middle, its mouth almost circularly truncate, its apex ending abruptly in a very narrow, cylindric, ascending *spur*, which is only one-third of the whole length of the body of the nectary.—*Capsule* ovate, oblong, perfectly smooth.—N. W.

3. *I. natans*, Willd. spec. i. 1175.

*Leaves* linear-lanceolate, serrate. *Peduncles* three-flowered. *Berries* five-seeded.

*Teliga*. Neer-Ganaroo, i. e. *water Oleander*.

This is a large annual species; a native of ponds, ditches, &c. of sweet water. It flowers during the rainy and cold season.

*Stem* piped, all the parts that grow in, or float on the water, bending in various directions, and being often some yards in length; the part above the water is erect, branchy and from one to two feet high. The former part is jointed, with roots from the joints, and the pipe interrupted there: the erect part five-sided, smooth, coloured, as thick as the fore-finger; pipe interrupted at the leaves, as in the floating parts.—*Leaves* sessile, scattered, lanceolate, serrate, smooth; from four to five inches long, and less than one broad; there is a gland on each side of the base instead of stipules.—*Peduncles* axillary, solitary, generally three-cleft, three-flowered.—*Bractes* (Involucres) oblong.—*Flowers* large, very beautifully variegated with red, white, and yellow.—*Pericarp*. *Berry*, sub-globular, five-grooved, succulent, smooth, red, size of a cherry.—*Seeds* five, hard, nut-like, obliquely oblong, lapped over at both ends.

When in flower, this is one of our most elegant water plants.

*Obs. by N.W.*

Roth surmises (Nov. Spec. 164) that *I. triflora*, L. is this plant;



as far as regards the type of this species, *I. pedunculis, trifloris, foliis angusto-lanceolatis*, Linn. zeyl. 315, this may be correct; but *Balsamina angustifolia, floribus ternis communi pedunculo ortis*, Burm. zeyl. 41. t. 16. f. 2. which Linn. himself and all succeeding authors quote as a synonym, is widely different.—N. W.

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*Additional species by N. W.*

4. *I. cristata, Wall.*

*Stem* pubescent, slightly angular, scarcely at all jointed. *Leaves* lanceolate, cuspidato-serrate, acuminate, pubescent. *Peduncles* few-flowered, equalling the petioles; the uppermost petal with a sharp keel.

*Nectary* longer than the pedicel, infundibuliform, tapering into an incurved spur.

Seeds of this plant were communicated to me in 1817 by my friend Dr. Govan from *Hungtoo* in Bissepur, on the confines of Chinese Tartary. The plants blossomed in the Hon. Company's botanic garden in March of the following year.

An erect, succulent, smoothish species, about three feet high. *Stem* purplish below, thick, cylindric, a little angular, and almost entirely without joints, pubescent towards the apex, as are also the opposite or alternate simple *branches*.—*Leaves* alternate, spreading, at length nodding, about three inches long, pubescent, attenuate at the base, all the serratures ending in a subulate hyaline cuspis; short-petioled.—*Stipulary* gland on one side only of the axil, large, ovate, adnate, mucous, purple, evanescent.—*Peduncles* short, axillary, from two- to four-flowered, pubescent; *pedicels* half an inch long, bearing above their middle a pair of linear, carinate *bractlets*.—*Flowers* yellow, with minute purple dots, two-lipped, the under lip elongated.—*Calycine leaflets* ovate, acute, a little gibbous at the base.—*Upper petal* broad-ovate, retuse, ascending, keeled on the back; *lateral ones* with a gib-

bous, entire inner margin, and two-lobed outer margin; the exterior lobe largish, oblong. *Nectary* truncate, longer than the pedicel, ending gradually in a cylindric, ascending *spur*.

*Obs.* This pretty plant seems to be distinct from our European *I. Noli-tangere* in the following points. The stem is without joints; the tender shoots are often marked with small cylindric purple glands, as is the case also with most of the following species; the leaves are acuminate, the upper petal is marked with a sharp longitudinal crest on the back, and finally the outer lobe of the lateral petal is oblong and protruding much.—N. W.

### 5. *I. urticifolia*, Wall.

*Stem* jointed, smooth. *Leaves* ovate, most finely acuminate, attenuate at the base, grossly and obtusely serrate, with gland-bristly crenatures. *Peduncles* very long, filiform, few-flowered.—*Nectary* equalling the pedicel, ample, cone-shaped, ending rather abruptly in a cylindric spur.

Found by my people at Gosain-Thau in the Himalaya, in flower in August and September.

A large, sub-simple or sparingly branchy, erect, smooth, and shining species, rising from a fibrous root; sometimes glandular towards the top. *Leaves* large, ovate, ending in a very long, linear acumen, tapering and acute at the base, grossly, obtusely, and unequally serrate, with a subulate, mostly gland-capitate tooth in each crenature, proceeding sometimes from the gibbous back or the anterior margin of the serratures themselves; from three to five inches long, with a few scattered pellucid hairs on both sides, especially along the primary vessels underneath; shining above. *Petiol* about an inch long, a little margined. *Peduncles* axillary, solitary, filiform, smooth, almost as long as the leaves, divided at the apex into four or five alternate, longish, slender, one-flowered *pedicels*, each of which is supported by a lanceolate, lengthened, acuminate *bracte*.—*Flowers* large, yellow, nodding with an ample nectary and large lower lip as in *Noli-tan-*

gere, to which this species is nearly allied.—*Capsule* oblong, smooth.—N. W.

6. *I. sulcata*, Wall.

*Stem* smooth, jointed and deeply furrowed. *Branches* opposite. *Leaves* opposite, cuspidato-serrate, somewhat rounded at the base, on glandular, slender *petiols*.—*Peduncles* opposite, shorter than the leaves, many-flowered. *Nectary* ample, cone-shaped, ending abruptly in a curved, slender spur.

Discovered at Gosain-Than together with the preceding species, to which it comes very near. It differs however, in its opposite leaves, deeply furrowed branchy stem, and acute serratures, and in other respects as pointed out in the specific character.—N. W.

7. *I. heterophylla*, Wall.

*Leaves* opposite, sessile, linear, very long, exceeding their interstices, acute, remotely cuspidato-serrulate, with a rounded base. *Peduncles* axillary, fascicled, shorter than the leaves, one-flowered. *Anterior* lobe of the lateral petals very large and protruding; *spur* very long.

This species which is a native of the mountains bordering on the district of Sāhet, comes very near to *I. rosmarinifolia*, Retz.; it was communicated to me by Mr. F. De Silva.

An erect, smooth species. *Stem* seemingly angular and jointed, with a few opposite, erect, simple *branches*; about two feet high.—*Leaves* opposite, five or six inches long, tapering gradually from the base, which is rounded, or sub-cordate, and about half an inch broad, to an acute point; margins remotely notched with small incumbent serratures, each terminating in a long bristle; somewhat scabrous from a few short hairs on the upper side, the under one silvery, with a few remote, longitudinal pairs of opposite nerves; they are about twice as long as their interstices, and sometimes they are furnished with a very short, broad *petiol*. *Peduncles* fascicled, sub-verticillate, about two inches long, bearing a large purplish flow-

er. *Calycine leaflets* linear-falcate, acuminate, hairy on the outside as is also the small upper petal.—The two *lateral petals* two-lobed; the inner lobe small, the outer one extremely large, semi-ovate; the inner margin rectilinear. *Nectary* obliquely truncate, infundibuliform, narrow, tapering from the base into a slender, ascending, and incurved *spur* which nearly equals the pedicel in length. *Capsule* smooth, oblong, a little ventricose, furrowed, an inch long, containing a number of small brown seeds.—N. W.

8. *I. bracteata*, Colebr. Mss.

*Leaves* lanceolate, serrulate, sub-opposite. *Racemes* terminal, oblong, many-flowered, fringed with the innumerable, long, coloured hairs of the lanceolate *bractes*. *Lower lip* of the flower very large. *Spur* long, ascending.

A native of Silhet, and from thence introduced into the Hon. Companys botanic garden in 1814, by the late Mr. Smith. It blossoms during the rainy season.

This most charming plant is smooth and succulent; it grows to the height of two feet, with a jointed, purplish stem and branches; sometimes it is nearly undivided. *Leaves* opposite and alternate on the same plant, two to three inches long, smooth, acute at both ends; the serratures incumbent, those nearest the base bristle-pointed; dark-green above, pallid and almost silvery underneath. *Petiol* short, flat-tish above. *Racemes* terminal, erect, from two to five inches long, before expansion globular and capitate, afterwards oblong; beautifully decorated with numerous pink-coloured large flowers, interspersed with the dense pink hairs of the *bractes*. The *bractes* are situated under each pedicel, lanceolate, plicate, recurved, about five lines long, pale green, fringed in a very elegant manner with a single row of dense, very long, simple, sharp, pink-coloured, shining hairs, which are alternately divaricate upwards and downwards. *Common peduncle* two inches long, slender; *partial* ones filiform, twice as long as the bracte which supports them.—*Calyx* very small, quickly de-

ciduous; *leaflets* lanceolate. *Upper petal* small, ovate, ending in a recurved point, concave, with gibbous back, which is greenish, with purple veins. *Lateral ones* nearly an inch long, constituting the lower, and by far the largest lip; their inner margin uneven, a little notched, sub-unguiculate; the outer one two-lobed; the external lobe very large, oval.—*Nectary* infundibuliform, obliquely truncate, acute on its anterior margin, white with a pinkish tint, beautifully veined, gradually narrowing into a very slender ascending *spur*, which is longer than the flower itself.—*Capsule* ovate, bellied, acute at both ends, smooth, five-furrowed, containing a few acute, brown, pubescent seeds.—N. W.

9. *I. bicornuta*, Wall.

Branchy, erect. *Leaves* ample, approximate, ovate; acuminate, grossly serrate, a little hairy above.—*Corymbs* axillary, crowded towards the top of the stem and branches, long-peduncled, consisting of fascicled flowers. *Nectary* very large, conical, ending abruptly in a filiform spur; its mouth furnished with a long horn-like acumen. *Capsule* cylindric.

I found this on Chundrugiri and Sheopore in Nipal. I have also had it from more northern mountains, towards Gosain-Than.

Fleshy, erect, branchy and paniced, from two to three feet high. *Stem* jointed, mostly simple, sharply angular towards the top, with several thick, cylindric, purple glands scattered along the angles, otherwise smooth.—*Leaves* scattered, the uppermost very closely approximate, ovate-lanceolate, from six to eight inches long, grossly and obtusely serrate, with a short subulate bristle between each serrature; ending in a long, sharp, entire acumen; base tapering and decurrent on the petiol; a little hairy above, smooth and often purple underneath.—*Petiol* slender, about three inches long, hairy at the base; on each side of the axil is a pair of small fleshy, oval, obtuse, glandular, somewhat spreading *stipules*.—*Flowers* large, with purplish dots, peduncled, disposed in axillary, corymbose racemes, which are crowded towards the apex of the stem, equalling the leaves, or some-

what shorter than they. *Peduncle* three inches long, slender, erect; *pedicels* filiform, fascicled or verticilled, sub-unilateral, an inch and a half long, supported by three lanceolate, gland-acute, spreading, at length reflexed *bractlets*.—*Sepals* obliquely ovate, with a subulate point. *Galea* ovate, acuminate, concave, purplish; *lateral petals* oblong, two-lobed, an inch long; the inner margin is furnished about the middle with a short yellow *claw*. *Nectary* very ample, conical, ascending, ventricose and gibbous, as long as the pedicel, ending in a cylindric, curved *spur*; the mouth truncate, ending anteriorly in a long filiform process. *Capsule* cylindric, smooth, shining, nearly an inch and half long, containing eight or ten sub-cylindric seeds.—N. W.

10. *I. mollis*, Wall.

Upper parts very soft and villous. *Leaves* lanceolate, acuminate, with gibbous, cuspidate serratures. *Peduncles* solitary, half the length of the leaves, filiform, one-flowered. *Sepals* ovate. *Spur* as long as the flowers, slender, with the end incurved.

I have only found this on Sheopore, delighting like all the rest in rich, moist, shady situations, and blossoming during the rains.

*Stem* two or three feet high, erect, fleshy, and sub-diaphanous, often purplish, jointed, with long alternate *branches*; about the thickness of a swan's quill at the base, very soft and villous towards the top, the lowermost joints sometimes rooting.—*Leaves* alternate, lanceolate, acuminate, with gibbous, incumbent, cuspidate serratures, base attenuate and decurrent, almost entire (as is also the acumen); soft and pubescent on both sides, especially underneath, where they are marked with copious oblique nerves; from four to six inches long.—*Petiol* slender, about an inch and half long; margined towards the leaf.—*Peduncles* axillary, one-flowered, very slender and filiform, villous, several times longer than the petiols, jointed a little above the base, and there furnished with a pair of small, lanceolate *bractlets*.—*Flowers* large, purple, nodding. The *sepals* obliquely ovate, acute, a little hairy on the back, otherwise smooth. *Corolla*

spreading, bilabiate; the uppermost *petal* or *casque* reniform-cordate, a little contracted at the upper part, where it is retuse, with an intermediate cuspis, convex, and slightly keeled on the back; *lateral* ones twice the length of the upper one, the inner margin rectilinear, notched towards the extremity, the outer margin obtusely two-lobed, lobes ovate, unequal in size, that at the base being the smallest. *Lower petal* small, infundibuliform, with an oblique mouth, the bottom continued into a slender, sub-cylindric, slightly compressed, ascending *spur*, whose apex is decurved and retuse. *Column* oblique, thick, truncate. *Filaments* clavate.—N. W.

### 11. *I. longicornu*, Wall.

Perfectly smooth, erect, paniced, with many approximate joints. *Leaves* linear-lanceolate, elongated, serrate, *Racemes* axillary, paniced; *flowers* long-peduncled; *spur* exceedingly long, filiform.

A native of Sheopore. I have also had it from the Western part of Nipal, where it was gathered by my friend Dr. Govan; also from Shreenugur.

A large, erect, ramous, smooth and fleshy species. *Stem* round, with numerous approximate, ventricose joints; the base sometimes as thick as the thumb. *Branches* simple, sub-fastigiate, copiously jointed, marked with two elevated, opposite lines, which run down from the insertion of the petiols.—*Leaves* very numerous and approximate towards the upper part of the stem and branches, scattered, spreading, narrow and almost linear-lanceolate, with gibbous, incumbent serratures, each of which ends in a long, subulate bristle; attenuate at both extremities; long-acuminate, dark-green and shining above; perfectly smooth, with copious, very oblique nerves underneath, from three to six inches long. *Petiol* slender, from one to two, or even three inches long, a little widening at the base; and there furnished on each side with a purple, roundish, flat gland, from whence the above-mentioned decurrent, sometimes glandular lines on the branches originate.—*Flowers* yellow, fragrant, peduncled, middle-sized, disposed in very numerous, axillary, solitary, long-peduncled,

oblong, erect *racemes*, about half or one-third shorter than the leaves, forming a terminal, leafy, sub-fastigiate *panicle*. *Peduncle* very slender, round, from three to six inches long, naked; *partial ones* approximate, an inch long, supported by ovate or lanceolate, acuminate, three-nerved *bractes*; *sepals* ovate, acute, semi-cordate at the base. Uppermost petal round, concave, a little ciliate, more broad than long. *Lateral ones* thrice its size, two-lobed, with a short narrow *claw*. *Lowermost* petal truncate, with a short point on the anterior margin, ending in an exceedingly long, filiform, ascending spur, which is many times longer than the flower itself and thrice the length of the pedicel.—N. W.

12. *I. calycina*, Wall.

Erect, branchy, jointed, villous. *Leaves* ovate, finely acuminate, acutely serrate. *Stipules* alternate, glandular. *Peduncles* axillary, two-flowered, equalling the petiols. *Calyx* large, ovate. *Nectary* very ample, ending in a long, cylindric, ascending spur, exceeding in length the peduncles. *Capsule* cylindric.

I have found this on Chitlong and on Chundrugiri in Nipal.

Erect, branchy, fleshy, jointed, villous with short, soft, greyish hairs. *Stem* slender, contracted between the swelled joints, besprinkled with innumerable, small, purple dots. *Leaves* alternate, ovate, finely acuminate, attenuate at the base, sharply serrate, somewhat hairy on both sides, three inches long. *Petiols* slender, measuring about half the length of the leaves.—*Stipules* axillary, alternate, oval, somewhat recurved, ending in an obtuse, incrassated gland.—*Peduncles* axillary, villous, nearly as long as the petiols, two-flowered.—*Flower* large, yellow, with reticulate purple veins.—*Sepals* broad-ovate, acute, villous, larger than those of any of the other species, about five lines long.—*Nectary* ample, infundibuliform, gradually narrowing into a cylindric ascending spur, and together with it considerably longer than the peduncle.—*Capsule* cylindric, pubescent, an inch and a half long.—N. W.



13. *I. scapiflora*, Heyn.

*Leaves* round-cordate, obtuse, many-nerved, entire. *Scape* radical, bearing a raceme of long-peduncled flowers.

Specimens are preserved in Dr. Heyne's hortus siccus, without any habitat.

This singular species is about half a foot high, smooth. *Root* consisting of dense capillary fibres; in one of the specimens it seems to be tuberous.—*Leaves* two or three, radical, from round-cordate to reniform, sometimes, but rarely, ovate-cordate, three or four inches in diameter, many-nerved, elevated on long petiols.—*Scapes* a few, radical, longer than the leaves, terminated by a raceme of large, seemingly purplish, long peduncled flowers. An oval bracte under each peduncle. *Spur* measuring several inches, exceeding the peduncle in length. *Capsule* ovate-oblong.—N. W.

14. *I. scabriuscula*, Heyn.

Villous, with greyish short hairs. *Leaves* cuneate-lanceolate, acute, cuspidate-serrate, tapering much downwards, short-petioled. *Flowers* axillary, geminate, villous, spurless.

Specimens are preserved in Dr. Heyne's collection.

This is a small branchy species, about a foot high. The upper petal as well as the nectary villous on the outside; the latter concave, gibbous without any spur.—N. W.

15. *I. umbellata*, Heyn.

*Stem* entire. *Leaves* crowded towards the apex of the stem, ovate, obtuse, broad-crenate, acute, attenuate at the base, equalling the petiole. *Umbells* several, terminal, on long peduncles. *Spur* very long.

In the collection of Dr. Heyne.

16. *I. grandis*, Heyn.

*Leaves* ovate, serrate, acuminate, long-petioled, with two oblong

glands below the base. *Peduncles* axillary, three-flowered. *Flowers* extremely large, with a very long spur.

There are specimens of this fine plant preserved in Dr. Heyne's *hortus siccus* but without any habitat. The flowers appear to be yellow and are by far the largest of any of the species which have ever come under my observation. The nectary infundibuliform, upwards of three inches long, gradually tapering into a slender spur.—Besides the species, which have been partly described, and partly indicated above, I possess a good number of others from Nipal, and Sîhet, as also in Dr. Heyne's collection, which undoubtedly will prove distinct, but which I must postpone treating of to a future time.—N. W.

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*LEEa*, Schreb. *gen.* N. 1432.

*Calyx* five-toothed. *Corol* one-petalled, with a five-cleft, staminiferous *nectary* in the mouth of the tube. *Germ* six-celled; cells one-seeded.

This definition includes, I think, *Aquilicia* sambucina, which of course I do not consider as a distinct genus.

The position of the anthers in this family is so remarkable and anomolus, that I know of nothing like it elsewhere. The filaments are inserted into the bottom of the fissures of the nectary, and rise parallel with its segments, to their height, where they are quickly bent in and down, to their projecting apices, the inverted anthers are attached near the middle of their backs, with their sides touching, and in most of the species, as firmly united as in any syngenesious plant, forming a cylindrical tube round the stigma; in this position they remain, until by the detachment of the filaments from the nectary, they fall off in one body.

1. *L. macrophylla*, R.\*

Herbaceous. *Leaves* simple.

\* Horneman, hort. hafn. 231.—N. W.

*Sung.* समुद्रका, Sumoodruka.

*Beng.* Dhol-Shumoodra.

Is common throughout Bengal. Flowering time the rainy season.

*Root* tuberous, perennial, red.—*Stem* erect, annual, flexuose, jointed.—*Leaves* simple, alternate, petioled, broad-cordate, irregularly serrate, or tooth-lobed; posterior lobes large and overlapping each other; smooth on both sides, except that on the underside the numerous veins are very protuberant, of which the larger are always opposite; from one to two feet long, and nearly as broad.—*Petioles* tapering from the base, furrowed below, channelled above, as far as the stipule-like membrane reaches.—*Cymes* terminal, large; first division three-parted, or three distinct cymes, superior divisions less regular.—*Flowers* very numerous, small, white.—*Bractes* small, falling.—*Calyx* five-toothed, permanent.—*Corol* one-petalled. *Tube* length of the calyx. *Border* five-parted; *divisions* lanceolate, expanding with an incurved apex, and there bagged. *Nectary*; in this species the apices of the divisions are entire.—*Filaments* five, length of the nectary and inserted on the bottom of its five fissures. *Anthers* inverted within the mouth of the nectary, with their sides united.—*Germ* superior, six-celled, with one ovulum in each, attached to the base of the axis. *Style* cylindric. *Stigma* simple, perforated, lodged about the middle of the inverted anthers.—*Berry* much depressed, torose, size of a small cherry, obscurely six- or more-lobed, smooth, black, and succulent when ripe, six- or more-celled.—*Seeds* solitary. *Integuments* two; the *exterior* one somewhat nuciform, pretty thick, and brown; the *inner* one very thin, and lighter coloured, adhering to the perisperm.—*Perisperm* conform to the seed, deeply intersected with brown, clammy fissures.—*Embryo* small, scarcely half the length of the perisperm, subulate. *Cotyledons* subulate. *Radicle* inferior, pointing to the umbilicus.

*Obs.* The root promises to yield a colour fit for dying; its taste is astrigent, and it is mucilaginous.

2. *L. crispa*, Willd. spec. i. 1177.

Herbaceous, stem and branches fringed at the angles. *Leaves* pinnate; leaflets oblong, serrate. *Anthers* free.

Nalugu, *Rheed. mal.* ii. 43. t. 26.

Beng. Bun-chelta.

Grows wild among bushes near Calcutta; flowering time the rainy season; and though the flowers are not conspicuous yet the uncommonly elegant curled wings give to the whole plant a great degree of beauty.

*Root* perennial.—*Stems* several, herbaceous, somewhat woody, from four to five feet high, jointed, swelled above the joints, the young shoots chiefly are ornamented with from six to eight, thin, short, much curled wings.—*Leaves* alternate, petioled, generally quinate-pinnate, though in luxuriant plants the lower pair is sometimes compound.—*Leaflets* petioled, ovate-oblong, pointed, deeply and acutely serrate; veins numerous, simple, parallel, large, running off at an angle of about forty-five degrees, corresponding in number with the serratures of the margin, and ending in their points, as in *Dillenia speciosa*.—*Petioles* four- or five-winged; wings curled, &c. as on the branches.—*Stipules* falcate, not ciliate.—*Cymes* terminal, small, a little hairy, five-flowered.—*Bractes* minute, hairy, margins running down the next peduncle or pedicel immediately below, forming a deep groove thereon, with high winged margins.—*Calyx* absolutely five-toothed, permanent.—*Corol* as in the last species. *Nectary* also as in the last.—*Anthers* lodged within the mouth of the nectary, but not adhering to one another.—*Germ* conical, six-celled, with one *ovulum* in each, attached to the base of the axis. *Style* five-grooved.—*Berry* round, size of a small cherry, when ripe smooth, black, and succulent, six-celled.—*Seeds* one in each cell, all of which very frequently come to perfection, obliquely-obovate, inserted near the inner and lower angle to the lower part of a soft, central receptacle. *Integument* single, hard, and pretty smooth; a very thin membrane seems to cover and adhere to the perisperm.—*Perisperm* conform to the seed, deeply intersected with brown, clammy fissures.—*Embryo*

small, lodged in the base of the perisperm near the umbilicus, a little incurvate. *Cotyledons* subulate.—*Radicles* inferior, oblong.

*Obs. by N. W.*

This elegant shrub is well described and represented in Andrews's *Botanists Repository*, vol. V. 355. Roxburgh was no doubt misled when he adduced *Nalugu* of the hortus malabaricus for this species, neither the text nor the figure of Rheedee offering the least hint of any crispate wings or margins; it is quoted by most authors, together with Rumphius's *frutex aquosus foemina* and Burman's *Staphylea? indica* for *L. Sambucina*, Willd. (*Aquilicia*, Linn.) which our author separates into two species.

I have found a shrub in various parts of Nipal growing both on mountains and on valleys, and blossoming in the rainy season, which on the one hand approaches to *L. crispa*, and on the other to *L. hirta*. With the former it agrees in having somewhat crispate stem and branches and distinct anthers; with the latter in having villous, rather scabrous leaves. In my Mss. flora of Nipal I call it *L. aspera*, and may perhaps prove it to be a distinct species when I shall have an opportunity of comparing all the three shrubs together in this garden; but the genus labours under too many difficulties to warrant my increasing them by any doubtful addition.—N. W.

3. *L. robusta*, R.

Shrubby, jointed, pubescent. *Leaves* bi- and tri-pinnate; *leaflets* ovate-lanceolate, serrate, cuspidate. *Nectary* sub-globular.

A native of the northern Circars. In the botanic garden at Calcutta, it flowers during the rains.

*Stems* in plants five years old erect, about five or six feet high, stout, simple, flexuous, jointed, round, the woody parts pretty smooth, the more tender parts rather harsh with coarse, short pubescence.—*Leaves* alternate, from pinnate to tripinnate, from one to three feet long, and often broader than long. *Leaflets* ovate-lanceolate, the lateral ones with a broad cordate base, serrate, hairy under-

neath; from five to ten inches long, and from three to five broad.—*Petioles* channelled on the upper edge.—*Stipules* petiolar, large, semi-elliptic, villous, caducous.—*Cymes* terminal, super-decompound, villous.—*Flowers* very numerous, small.—*Bractes* linear, villous, caducous.—*Calyx* campanulate, five-toothed.—*Corol* green, five-cleft.—*Nectary* round, urceolate, pearl-coloured, inserted on the mouth of the small tube of the corol, and there contracted by a sharp vein on the inside, deeply five-parted; segments linear-oblong, fleshy, with a thin, rounded apex.—*Filaments* inserted into the bottom of the fissures of the nectary, above the middle jointed; and there bent in and down. *Anthers* linear-oblong, inverted, and in that position their margins are firmly united into a ring round the stigma.—*Germ* superior, ovate, six-celled, with one ovulum in each, attached to the base of the axis. *Style* short, but thin, and six-grooved. *Stigma* rather large, entire, convex.—*Berry* much flattened, size of a small cherry, smooth, black, and somewhat succulent, six-lobed, six-celled.—*Seed* solitary.—*Perisperm* conform to the seed, intersected with some deep brown fissures, as in all the other species examined by me.—*Embryo* small, a little curved. *Cotyledons* subulate. *Radicle* inferior, pointing to the umbilicus.

*Obs. by N. W.*

This is by far the largest species of them all; I have at this moment a leaf before me, which is full five feet long, by nearly six broad, with a petiol four inches round at the base.—N. W.

4. *L. hirta*, *Herb. Banks.\**

Shrubby. *Leaves* pinnate, and bi-pinnate; *leaflets* lanceolate, serrate, hairy. *Anthers* connected.

*Sung.* काकजङ्घा, Kakujungha, नदोकान्ता, Nadeekanta, काकतिक्ता, Kakutikta, सुबोमशा, Soobomusha, पारावतपदो, Paravatupudee,

\* *Hornem. hort. hafn.* 281.—*L. scabra*, Willd. *Ms. sicc.* Syst. Veg. iv. 814.—N. W.

दासो, Dasee, काका, Kaka, ध्वंक्षजङ्घा, Dhwankshwzjangha, काकाका, Kakahwa, अलोमशा, Ulomusha.

Beng. Kakujangha.

A native of the lower parts of Bengal. Flowering time the rainy season.

*Stems* several, somewhat woody, flexuose, jointed. *Bark* greenish, slightly scabrous; branches few, and like the stem.—*Leaves* alternate, petioled, from simple to decomposed.—*Leaflets* opposite, oblong, serrate, scabrous and hairy on both sides, particularly on the under one, from two to eight inches long, and from one to three broad.—*Petiole* and *petiolets* round, scabrous and hairy.—*Stipules* petiolar. —*Cymes* terminal, three-parted.—*Nectary* inserted into the edge of the projecting ring which surrounds the mouth of the tube of the corol, the tube of which is erect, and five-parted; divisions oblong, emarginate.—*Filament* five, the length of the nectary, and inserted into the bottom of its five fissures. *Anthers* oblong, three-fourths or more lodged within the mouth of the nectary, with their points downwards, and firmly coalescing at the sides into a tube.—*Berry*; when ripe it has much the appearance of a black currant, a little flattened, generally six-seeded, when dry it appears with as many lobes, (*torose*).—*Seeds*, &c. exactly as in the former and following species.

*Obs. by N. W.*

I have received specimens of this species from Silhet (and also of *L. Staphylea*) gathered on the hills bordering on that district, under the Bengalee name Popaïora (পপাইরা).—N. W.

5. *L. sambucina*, Willd. spec. i. 1177.

Shrubby. *Leaves* from simple to decomposed; *leaflets* ovate, oblong, serrate, smooth. *Cymes* super-decomposed.

*Frutex aquosus*, foemina, *Rumph. amb. iv. t. 45.*

*Aquilia Sambucina*, Linn. *Mant.* 211. *Gaert. carp.* 2. 127. t. 108.

A native of the Moluccas, from thence introduced in the botanic

garden at Calcutta, in 1798, where it blossoms during the rains and ripens its seed in November, December, and January.

*Stems* erect, almost straight, ramous, height of the whole plant from eight to twelve feet. *Bark* slightly furrowed lengthways, in other respects smooth. In this species roots generally descend to the ground from the lower joints of the stems.—*Leaves* from simple to decomposed. *Leaflets*, the single leaves, which are rarely present, from ovate to nearly round; those of the compound leaves from ovate-oblong to linear-oblong, serrate, smooth on both sides.—*Corymbs* terminal, trichotomous.—*Flowers* small, yellow; structure as in the former species.—*Berries* round, pulpy, smooth, glaucous, black, size of a marrow-fat pea, six-seeded; when dry torose.

*Obs. by N. W.*

I have found this species (perhaps more properly the next following) on the banks of the Rapti in Nipal near Bheempudi, in fruit in December. At Pinang and Singapore it is a common shrub, blossoming and ripening its fruit from August to November.—N. W.

6. L. *Staphylea*, R.

Shrubby. *Leaves* compound and super-decompound; *leaflets* linear-oblong, finely taper-pointed, serrate, smooth on both sides. *Cymes* thin.

- *Aquilicia Otillis* (*Otillis zeylanica*), Gaert. carp. i. 275. t. 57.

- *Staphylea* ? *indica*, Burm. ind. 75. t. 24. f. 2.

Beng. Kookoor-jihwa.

- Teling. Ancados.

*Stems* several, erect, stout, ligneous. *Branches* few; the young ones flexuose, smooth; round, articulated.—*Leaves* alternate, compound, and decomposed, commonly about eighteen inches long; *pinnae* opposite, generally two pair, the lower pair is sometimes compound; all terminate with an odd one. *Leaflets* opposite, petiolated, linear-oblong, pointed, serrate, smooth on both sides; from four to



seven inches long, and from two to three broad.—*Petioles* and *petiolets* round, smooth.—*Stipules* large, adjoined to the lower part of the petiole, coloured, leathery, falling.—*Cymes* terminal, large, with frequently a smaller one accompanying the chief one.—*Flowers* small, greenish white, very numerous.—*Calyx* cup-shaped, five-toothed, permanent.—*Corol* one-petalled. *Tube* a little longer than the calyx. *Border* five-parted; *divisions* oblong, concave, with an incurved point.—*Nectary* a yellow, fleshy, five-cleft ring, inserted into the mouth of the tube of the corol, descending with a contracted rim considerably into it, and rising about it; *divisions* emarginate.—*Filaments* five, inserted into the outside of the nectary, just below, or rather in the lower sloping edge of its fissures.—*Anthers* oblong, inverted within the nectary, their sides adhering to each other as in the plants of *Syngenesia*.—*Germ* superior, globular. *Style* the length of the tube of the corol.—*Stigma* simple.—*Berry* dry, size of a small cherry, flattened, five- or six-grooved, five- or six-celled.—*Seeds* one in each cell,

### 7. *L. integrifolia*, R.

Sub-arboreous. *Leaves* super-decompound; *leaflets* lanceolar, entire, acuminate. *Corymbs* super-decompound.

*Teling*. Booradipakai.

A native of the moist vallies among the Circar mountains. It is a large shrub, and flowers during the wet season.

*Leaves* alternate, super-decompound, about thirty inches long.—*Pinnæ* as in the last species; the lower pair always bipinnate.—*Leaflets* opposite, sub-sessile, linear-lanceolate and lanceolar, sometimes very slightly serrate; smooth above, a little downy underneath, from six to eight inches long, and from two to three broad.—*Petioles* and *petiolets* smooth, with an elevated ridge running along the upper side; beyond the lower pair of pinnæ the ridge has a groove in it.—*Stipules* as in the former.—*Corymbs* terminal, &c. as in the last species, but larger.—*Calyx* as in the other species.—*Corol*; *tube* shorter than the calyx, in other respects as in the last species.—*Nectary* composed

of five, erect, emarginate scales, issuing from the mouth of the tube of the corol.—*Filaments* five, alternate with and longer than the nectarial bodies. *Anthers* oblong, pointed.—*Pistil*, *pericarp*, and *seeds*, as in the last species ; it is rather more common for the capsule to be six-seeded in this species than in the others.

*VITIS*, Schreb. gen. N. 396.

*Calyx* five-toothed. *Corol* five-petalled. *Germ* two-celled, cells two-seeded, attachment inferior. *Berry* superior, from one- to four-seeded. *Embryo* erect, and furnished with a perisperm.

1. *V. indica*, Willd. spec. i. 1180.

Shrubby, scandent. *Leaves* round-cordate, often more or less angled, finely serrate, downy underneath. *Tendrils* panicle-bearing. *Germ* embraced by a five-lobed cup. *Berries* round, from one to two-seeded.

Schembra-valli, Rheed. mal. vii. 11. t. 6.

Beng. Amdhouka.

A native of various parts of India. Flowering time the month of April. The fruit ripens in July.

*Root* perennial.—*Stem* and *branches* long and slender, climbing up and over trees, hedges, &c. to an extent of many fathoms ; *young shoots* villous.—*Tendrils* opposite to the leaves, floriferous, beyond the flowers bifid.—*Leaves* alternate, petioled, round-cordate, more or less angular, finely serrate, more or less villous according to their age, particularly underneath, from three to six inches each way.—*Petioles* rather shorter than the leaves.—*Panicles* issuing solitarily from the middle of the tendrils, peduncled, ovate, dense.—*Flowers* numerous, and very minute, greenish purple.—*Calyx* small, five-toothed. *Petals* five, ovate-oblong, at first spreading, afterwards reflex, and not cohering at top as in some of the species. *Nectary* a five-toothed,

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saucer-shaped body, surrounding the base of the germ.—*Filaments* five, nearly as long as the petals.—*Germ* superior, nearly round, two-celled, with two ovula in each, attached to the bottom of the cell. *Style* none. *Stigma* five-lobed.

2. *V. lanata*, R.

Shrubby, climbing. *Leaves* cordate, serrate, woolly underneath. *Racemes* paniced, leaf-opposed. *Petals* cohering at top.

A native of the forests amongst the Circar mountains. Flowering time the cold season.\*

*Trunk* woody, climbing over trees, &c.; *young shoots* very long, covered with a little rusty wool.—*Tendrils* opposite, simple, or split.—*Leaves* alternate, petioled, cordate, serrate; above a little woolly, below much so; four inches long, by three broad.—*Petioles* round, woolly, two inches long.—*Peduncles* opposite, composed of compound racemes, a little woolly.—*Flowers* very numerous, small, green, fascicled.—*Petals* cohering at the top; when they drop they seem to be a monopetalous corol, and what was the top must then be considered as the bottom.—*Berries* round, purple, succulent, size of a pea, one- or two-seeded.

3. *V. latifolia*, R.

Herbaceous, climbing. *Leaves* cordate-lobate, crenate-serrate, smooth. *Tendrils* panicle-bearing. *Petals* oblong. *Germ*s embraced by a nectarial cup.

Vallia-Pira-Pitica, *Rheed. mal.* vii. 13. t. 7.

Beng. Govila.

A native of Bengal and of the warmer maritime parts of India, blossoming about the beginning of the rainy season; and ripening its fruit in July.

*Root* tuberous.—*Stem* and *branches* herbaceous, climbing, round,

\* Also common in Bengal and Behar. I suspect that *V. tomentosa* and *triloba*, Roth. nov. spec. 157, are varieties of this plant.—N. W.

and smooth, very long, and slender, running over trees, &c. to a great extent.—*Tendrils* leaf-opposed, generally two-parted, panicle-bearing.—*Leaves* petioled, alternate, always opposite to a tendril, nearly of a round, cordate-lobate shape, with three, five, or seven rather acute lobes; margins serrate-dentate, pretty smooth on both sides, length and breadth from three to nine inches.—*Panicles* issuing solitarily from the middle of the tendrils before they divide, peduncles ovate, dense.—*Flowers* very numerous, small, of a deep reddish brown.—*Bractes* linear.—*Calyx* small, obscurely five-toothed.—*Petals* oblong, at first expanding, then reflexed.—*Germ* superior, nearly round, two-celled, with two ovula in each, attached to the bottom of the cell. *Style* none. *Stigma* a pit in the lobate apex of the germ.—*Berry* of the size, shape, and appearance of a black currant, rarely more than two-seeded.—*Perisperm* conform to the seed.—*Embryo* erect, in the lower half of the perisperm. *Cotyledons* nearly round. *Radicle* inferior.

#### 4. *V. parvifolia*, R.

*Leaves* angle-cordate, three-lobed, crenate-serrate, smooth. *Stipules* oval. *Thyrse*s leaf-opposed, few-flowered.

A slender, perennial vine, of exactly the habit of the common grape vine; a native of the eastern part of Bengal. Flowers in February.\*

*Stems* and old *branches* ligneous, considerably flattened, ten or twelve feet high. *Bark* dark brown, with the exterior lamina thin, and frequently peeling off; *young shoots* somewhat angular, and pretty smooth.—*Leaves* simple, cordate, sometimes three-lobed, crenate-serrate, apex somewhat attenuate, smooth on both sides, about two inches long.—*Tendrils* bifid.—*Stipules* oval, caducous.—*Thyrse*s opposite to the leaves, diverging, very small, and only a little longer than the *petioles*.—*Flowers* very minute, green.—*Calyx* obscurely five-lobed.—*Petals* five, cohering, and falling off in one body.—*Nectary*

\* Common also in all parts of Nipal; see obs. under *V. glandulosa*, p. 479.—N. W.

five rounded scales, embracing the base of the germ, alternate with the filaments.—*Filaments* five, length of the germ, at first erect, but by age becoming recurved. *Anthers* ovate.—*Germ* round, four-celled, with one *ovulum* in each, attached to the base of the axis. *Style* scarcely any. *Stigma* obscurely lobed.

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*Additional species by N. W.*

5. *V. glaberrima*, Wall.

Smooth, fleshy. *Stem* four-cornered. *Leaves* ovate-oblong, subcordate, sub-obtuse, remotely bristle-crenate. *Corymbs* equalling the leaves, sub-simple, consisting of a number of umbellets. *Flowers* quadrifid, nectariferous, with linear-oblong *petals*. *Berries* two-celled. *Stipules* fleshy oval glands.

A native of Pinang, where it was found by Mr. Porter in flower in December.

This is a fleshy ramous species, smooth on all its parts, with slender, obtusely four-cornered, jointed *stem* and *branches*. The former is woody at the base. *Leaves* alternate, from three to five inches long, with very remote small crenatures, in each of which there is a short bristle; obtuse, rarely acute, trinerved at the base, having, besides, some remote, sub-opposite, lateral nerves; veinless; on petiols of about an inch or an inch and a half long. *Stipules* opposite, fleshy, oval, obtuse, glandular. There are no *tendrils* observable in any of my specimens. *Corymbs* oblong, opposite to a leaf or terminal, divided into several alternate branches, each containing two or three umbels of large, greenish, smooth *flowers*, which are oblong before expansion. *Pedicels* half an inch long.—*Calyx* flattish, almost truncate.—*Petals* nearly three lines long. *Stamina* four, surrounding a four-lobed nectary. *Berry* two-celled; the ripe one not observed.

*Obs.* The marks by which *Vitis* is separated from *Cissus*, *Ampe-*

*lopsis* and *Botria*, Lour. are so poor and vague, that they hardly admit of being employed for the purpose of affording the sub-divisions of one genus, and much less for discriminating four genera. I conform therefore, without hesitation to the decision of Mr. Brown, in the appendix to Tuckey's Expedition to Congo, p. 465, by which they all become united under *Vitis*. Besides those, which I am now adding, I have a great number of species, the publication of which I must reserve for another opportunity. The tribe is a difficult one, and requires much caution, in order to avoid confusion.

The plant just described comes near to Roxburgh's *Cissus cordata* (*repens*, Lam.) which I have found both in flower and fruit at Singapore in October, and which (at least one closely allied to it), I have also from Silhet; but it differs in the oblong-cordate obtuse leaves, four-cornered stem and branches, and its long corymbis of alternate umbells; the flowers are larger. It is not far removed from Loureiro's *C. umbellata*, which differs, chiefly, in having most entire, opposite leaves and woolly petals.

The berries of Roxburgh's *L. cordata* are larger than those of Rheede's Meriam-pulli, and one-seeded, as correctly observed by that author and by Rumphius, in treating of his *Funis crepitans minor*, Herb. Amb. v. 446. t. 164. f. 2.—N. W.

# 6. *V. gracilis*, Wall.

*Stem* filiform, villous while quite young. *Leaves* ovate-cordate, attenuate and acuminate, cuspidate-dentate, pubescent above, with villous nerves underneath. *Stipules* semi-cordate, villous. *Spikes* filiform, most numerous, short, forming elongated, long-peduncled, cirriferous, villous clusters. *Flowers* minute, four-cleft. *Berries* three-seeded.

I found this at Singapore in flower and fruit in September.

This is an extremely slender species with filiform stem and branches, which are scarcely thicker than a crow-quill; all the young parts as also the petiols, nerves of the leaves and inflorescence covered with dense cinnamon-coloured down.—*Leaves* three inches long,

membranous, tapering into a sharp acumen, margin rounded, marked with remotish, cuspidate teeth; the under side marked with three nerves at the base, besides several opposite, parallel ones; veined; lobes of the base rounded; sinus very small. *Petiol* about one-third the length of the leaf itself. *Clusters* extremely slender, pendulous, tapering from the base, about three inches long, equalling their filiform *peduncles*, which bear a simple *tendril* at the middle. *Spikes* very numerous, filiform, brown, villous, sessile, the lowermost often geminate, an inch long, the rest gradually shorter. *Flowers* exceedingly small, four-cleft, approximate, globular, sessile, villous. *Berries* ovate, with three triangular, large seeds.—N. W.

#### 7. *V. barbata*, Wall.

*Stem*, *branches*, *petiols* and *peduncles* covered with copious long capitate bristles. *Leaves* round-cordate, sinuato-dentate, slightly three-lobed, smoothish. *Clusters* disposed in oval *bunches* bearing a dichotomous *tendril*. *Flowers* four-cleft. *Style* none.

A native of the district of Silhet, and from thence communicated by Mr. De Silva; it flowers in August.

Beng. Tagora (টগরা).

This is a remarkable species and cannot be confounded with any of the rest. It approaches to *V. latifolia*.—The *stem* and *branches* long, cylindric, very thickly beset with long, pale, ferruginous, subulate, capitate, spreading, rather softish bristles. *Leaves* very large, acuminate, five-nerved, veined, a little woolly along the vessels on both sides; the sinus at the base deep and narrow, the lobes very large, rounded, and approaching each other.—*Petiols* about half the length of the leaves, bristly, with a pair of small stipules at the base.—The *bunches* consist of numerous short villous *racemes* of four-cleft, smooth, sub-sessile *flowers*. *Common peduncle* bristly, equalling the *petiol*, bearing a very long smoothish, twice dichotomous *tendril* above its middle. *Nectarial* ring and *style* wanting.—N. W.

8. *V. glandulosa*, Wall.

*Stem* dotted, roughish. *Branches* villous. *Leaves* broad-cordate, ovate, three-lobed throughout, villous underneath, with the axils of the nerves glandular. *Tendrils* dichotomous. *Corymbs* short, dichotomous.

I have found this on the mountains about the valley of Nipal, where it blossoms with the other *Viniferae*, chiefly, during the rainy season, ripening its fruit towards the close in September and October.—In the Hon. Company's botanic garden at Calcutta it blossomed freely in May and June.

*Stems* round, with grayish dotted bark; *branches* round, slender, jointed, pubescent. *Leaves* broad ovate-cordate, acuminate, three-lobed, sometimes with two additional lobes towards the base; lobes acute, grossly dentate, teeth rounded, ending in a short cuspis; four or five inches long, five-nerved, pubescent above, villous underneath, with opposite lateral nerves, and with a hairy pit in all the axils of the principal vessels.—*Petiol* slender, pubescent, about half as long as the leaf.—*Stipules* semicordate, membranous, withering.—*Flowers* small, five-cleft, smoothish, disposed in short dichotomous *corymbs*. *Peduncles* pubescent, common one equalling the leaf and often bearing a twice or thrice dichotomous tendril.—*Nectarial* ring crenate, five-lobed. *Berry* small, round, deep purple, four-seeded, smooth.

*Obs.* This species comes near to *V. parvifolia*, Roxb. which is very common on the mountains of Nipal and Sirmore, but differs in the following points. Its stem is scabrous somewhat ash-coloured and the branches jointed, villous; in the other the stem is covered with a smooth, brown, separating epidermis, the branches are without joints, and only here and there furnished with a little loosely adhering wool. Its leaves are rather larger, with broad rounded teeth, three-lobed throughout, and villous underneath; in Roxburgh's plant they are sometimes without any lobes at all, the teeth are acute, and the under surface smooth except a fascicle of hairs in the primary axils of the vessels. The inflorescence of the latter forms a bunch, consist-



ing of many-flowered umbellets and the tendrils are simply bifid; while in my plant the inflorescence is more open, dichotomous, few-flowered, and the tendrils several times dichotomous.—N. W.

9. *V. rugosa*, Wall.

All the upper parts densely tomentose, ferruginous. *Leaves* broad-cordate, acuminate, unequally three-lobed, dentate, villous and rugose above, woolly underneath. *Corymbs* ovate, dense, consisting of innumerable umbellate, pentandrous flowers. *Petals* linear, spreading.

A native of all the mountain and other forests in Nipal.

*Branches* very long, obscurely four-cornered, with a smoothish, brown, shining epidermis. All the upper parts, as well as the young shoots and under surface of the leaves densely clothed in a web of separable ferruginous tomentum which becomes pale and nearly white by age. *Tendrils* opposite to the leaves and branches, twice dichotomous, becoming smooth by age. *Leaves* broad-cordate, acuminate, trilobed, acutely dentate; sometimes as large as those of the common Burdock; upper surface villous, elegantly rugose, almost like those of *Rubus rugosus* of Dr. Hamilton (Rees's Cyclop. in loco); under surface strongly ribbed, lateral lobes rather short, unequal in size; those of the base large, rounded.—*Petiol* thick, tomentose, half the length of the leaf.—*Corymb* ovate, dense, hoary, ferruginous.—*Flowers* umbellate, small, five-cleft. *Petals* lanceolate, recurved, quickly deciduous as are also the spreading purplish *stamens*. A narrow, yellowish, crenulate disc surround the ovary.

*Obs.* Resembles *V. lanata*, Roxb. consequently also *V. tomentosa* and *triloba*, Roth. but seems to differ in its far greater size, and its spreading, not cohering petals.—N. W.

10. *V. rubifolia*, Wall.

*Branches* angular, villous. *Leaves* pinnate, with five pairs of oblong, acuminate, grossly and sharply serrate, sub-cordate leaflets; the odd one sub-ovate; their under surface glaucous, a little hairy.

This singular species was communicated to me by Mr. De Silva from the Juyantiya mountains on the eastern frontiers of Bengal where it blossoms in June.

*Beng. Rajgaree* (রাজগারী).

It appears to be a large climbing shrub.—*Stem* brown, smooth, as thick as a common ratan. *Branchlets* slender, villous, angular. —*Leaves* about six inches long. *Common footstalk* densely beset with brownish short hairs. *Leaflets* from seven to eleven, about two and a half inches long, smooth above, a little villous underneath; the lowermost on petioles measuring nearly half an inch, the rest short-petioled; the odd or terminal one mostly sub-ovate; they are all marked with large cuspidate, unequal serratures, without being in the least lobed.—*Tendrils* leaf-opposed, bifid.—*Corymbs* slender, open, dichotomous, slightly villous.

*Obs.* Mr. De Silva informs me that the flowers are fragrant and of a yellowish green colour and that the fruit is esculent. I have only seen the former in a very imperfect state, but I have no doubt of the plant belonging to this genus. It comes very near to *V. pinnata*, Vahl. Symb. iii. 48. (Ampelopsis, Syst. Veg. v. 322,) communicated to that botanist by my worthy preceptor and friend Professor Schumacher and supposed by Sir J. E. Smith, Rees's Cyclop. in loco, to be a mere variety of *Vitis laciniata*. It differs in being hairy and in the leaflets being oblong with a sub-cordate base and numerous large serratures.—The leaves are much like those of a *Rubus*.—N. W.

#### 11. *V. semicordata*, Wall.

*Leaves* ternate, their under surface villous, as are also the young branches. *Leaflets* acuminate, cuspidato-serrate; the lateral ones semi-cordate, very gibbous; the intermediate ones ovate, tapering downwards. *Cymes* oblong.

This I have only found on the mountain of Shivapore in Nipal, blossoming in September.

A large climbing perennial shrub; stem covered with brown

smooth bark, besprinkled with copious callous dots.—*Young branches* covered with long, spreading, ferruginous, very soft, jointed hairs.—*Leaves* approximate, ternate, coriaceous, smooth above, villous and reticulate underneath, nearly equalling their villous *petioles*.—*Leaflets* about three inches long, cuspidato-serrate, acuminate, sub-sessile; *lateral* ones obliquely semi-cordate, their outerside being very broad and the base round, gibbous; the inner one narrow and acute, the *middle leaflet* is broad-ovate, tapering downwards.—*Stipules* lanceolate, adpressed, withering. *Tendrils* long, smooth, twice or thrice dichotomous.—*Cymes* terminal on the branchlets, or opposite the leaves, oblong, dichotomous, fleshy, smooth, with lanceolate *bractlets*. *Flowers* sub-umbellate, smooth, greenish, five-lobed.—*Calyx* membrane-margined, obscurely five-lobed. *Petals* oblong, spreading, headed at the apex. *Stamens* spreading.—*Ovary* obscurely five-cornered, two-celled, with two erect ovula. *Style* columnar. *Stigma* truncate.—N. W.

## 12. *V. mollissima*, Wall.

*Leaves* ternate, covered with very dense, soft, whitish hairs; the *lateral leaflets* acuminate, unequally crenate, semi-ovate; the *intermediate* ones elliptic, with a narrow sub-retuse base. *Cymes* divaricate, dichotomous, villous. *Flowers* tetrandrous. *Berries* round, smooth, four-seeded.

A native of the mountains of Pinang, blossoming during the rainy season. Communicated by Mr. Porter.

A large, extensive climber, with slender, brown, smooth, callous-dotted *branches*. *Leaves* a span or more long, covered on both sides with long, extremely soft, dense hairs, becoming somewhat smoother above as they grow old or are produced on older branches. *Leaflets* from five to six inches long, unequally and obtusely, sometimes grossly crenate, ending in a fine acumen; strongly vascular underneath; the *lateral* ones semi-ovate or semi-cordate, sub-sessile; the *intermediate* ones elliptic, narrow and obtuse, sometimes even retuse at the base.—*Common footstalk* three inches long, villous, covered with

reddish hairs. *Stipules* membranous, lanceolate, ciliate, deciduous. — *Tendrils* very long, smooth, once or twice dichotomous. *Cymes* axillary, broad, flat, divaricate, dichotomous. *Flowers* large, tetrandrous. — *Berries* nearly as large as a cherry.

*Obs.* The leaflets do not fall off on being dried, and those of the young shoots attain in that state a yellowish green colour.—N. W.

### 13. *V. bracteolata*, Wall.

Smoothish, slender. *Leaves* ternate, cuspidato-serrulate; the *lateral* leaflets semi-ovate. *Cymes* long-peduncled, much divided, with oblong, deciduous *bractes*. *Flowers* tetrandrous.

A native of the Juyuntiya mountains, where it was found in flower in September by M. De Silva.

*Beng.* Tita gwaaleeya Luta (ডিতা গুৱালেয়া লুতা).

Smooth, slender, ramous; the upper parts slightly pubescent. — *Leaves* ternate; *leaflets* cuspidato-serrulate, acuminate, three inches long; a little pubescent underneath; the *lateral* ones semi-ovate; the *intermediate* ones lanceolate. — *Common footstalk* slender, two inches long; *partial* nearly equal, scarcely one-third of an inch long, villous. *Stipules* ovate, caducous, smooth. — *Tendrils* long, simple. *Cymes* axillary, on long, filiform pubescent *peduncles*, di- or trichotomous, with an oblong, concave, membranous, deciduous, smooth *bracte* under each division. *Flowers* very small, tetrandrous.—N. W.

### 14. *V. cinnamomea*, Wall.

Clothed with dense, soft, ferruginous tomentum. *Leaves* from simple, ovate-cordate, sub-trilobate, to ternate and quinate, with semi-cordate lateral leaflets. *Corymbs* long, pendulous, cirriferous, consisting of most approximate, divaricate *spikes*. *Flowers* tetrandrous.

I found this species in the islands in the straits of Malacca, Pinang, Singapore, Pulo Dingding, &c. blossoming and in fruit during the rainy season.

A very powerful shrub, climbing over large trees, the branches

and inflorescence hanging down in beautiful festoons. *Branches* round, clothed with a great abundance of thick, cinnamon- or rust-coloured, soft tomentum; while young extremely hoary.—*Leaves* large, leathery, a span long, trinerved, the lateral nerves pedate; varying from undivided, broad-ovate, entire or acutely three-lobed, with a slightly cordate base and acuminate apex, to ternate, or pedato-quinate. *Leaflets* five or six inches long, acutely dentate, acuminate; *lateral* either semi-cordate, or cuneate at the base, in the latter case there is on each side an additional somewhat smaller leaflet; the *intermediate* ones longer than the rest, tapering much downwards, sub-sessile. They are densely tomentose and strongly marked with ferruginous ribs on both sides. *Petioles* from two to three inches long, tomentose, ferruginous.—*Stipules* lanceolate, hoary.—*Tendrils* long, hoary, undivided, mostly corymbiferous.—*Corymbs* from six to eight inches long, slender, sub-cylindric, hoary and ferruginous, consisting of very numerous, crowded, from one to three inches long, sessile, spreading or reflected *spikes*, of minute, globular, sessile, tetrandrous, smooth flowers. *Berries* roundish, smooth, purple, three- to four-cornered, containing three or four triangular seeds.

*Obs.* This is a most charming plant, remarkable on account of the varying form of its leaves and the dense tomentum with which most of its parts are covered.—N. W.

### *MUSA*, Schreb. gen. N. 1563.

Polygamous. *Calyx*. *Spathes* partial, one- or many-flowered. *Corol* of two unequal petals. *Flowers* all hermaphrodite. Male-hermaphrodite toward the apex of the spadix. *Germ* inferior, abortive. Female-hermaphrodite toward the base of the spadix. *Germ* inferior, three-celled, cells many-seeded, attachment central. *Berry* oblong, three-celled, many-seeded. *Embryo* central, and amply furnished with a perisperm.

1. *M. sapientum*, Willd. spec. iv. p. 894.

*Spadix* drooping, *spathes* ovate, deciduous; those of the female

hermaphrodite flowers of the wild plant often wither and remain till the seeds are ripe, but in the cultivated varieties they are always deciduous.

Bata, *Rheed. Mal.* i. 17. t. 12. 13. and 14.

Musa, *Rumph. amb.* v. 130. t. 60.

Ram-Kulla, Walli-kulla, Ram-jakialia-kulla, 'are the names the wild *Banana*, and plantain are known by at Chittagong, where they are found indigenous in the forests and blossom during the rains.

Sungs. कदली, Kudulee, वारणभुसा, Varunubhoosa, रम्भा, Rumbha, मोचा, Mocha, अंगुमत्फला, Ungshoomutphula, काशीला, Kashtheela, सुफला, Soophula, सुकुमारा, Sookoomara, सक्तफला, Sukritphula, गुच्छफला, Goochchhuphula, हस्तिविषाणी, Hustivishanee, गुच्छदन्तिका, Goochchhuduntika, काशीरसा, Kashtheerusa, निसारा, Nisara, राजेष्टा, Rajesta, बालकप्रिया, Balukupriya, उरुस्तम्भा, Ooroostumbha, भानुफला, Bhanooophula, वनलक्ष्मी, Vanulukshmee.

Beng. Kula,

Telinga. Aretti; and Komaretti the cultivated plantain.

The varieties of the *Banana*, cultivated over India, are very numerous, but fewer of the plantain, as I have hitherto obtained knowledge of only three; whereas, I may safely say, not less than ten times that number of the former have come under my inspection.

Their duration, culture, habit, and natural character are already well known; I shall therefore confine myself to (what I think,) the original wild *Musa*, from which I conclude all the cultivated varieties of both plantain and *banana* proceed, and which I consider as varieties of that one species.

In the course of two years, from the seed received from Chittagong, these attained to the usual height of the cultivated sorts which is about ten or twelve feet. They blossom at all seasons, though generally during the rains; and ripen their seed in five or six months afterwards; the plant then perishes down to the root, which long be-

fore this time, has produced other shoots; these continue to grow up, blossom, &c. in succession for several years.

Their *Leaves* are exactly as in the cultivated sorts.—*Spadix* simple, drooping — *Spathes* partial, numerous, ovate, concave, smooth, crimson on the inside; outside darker-coloured; six or eight of these nearest the base of the spadix embrace a double row of female-hermaphrodite flowers, and are not always deciduous, but sometimes wither, and remain till the seeds are ripe. All the rest, and they are very numerous, expanding in succession for two or three months, embrace similar double rows of abortive, or male-hermaphrodite flowers; which, with their spathes, are always deciduous.—*Calyx* no other than the just mentioned spathes.—*Corol* of two, dissimilar petals; the *exterior* one with an unequally five-toothed apex, which soon becomes revolute, the *inner* one sometimes called the *nectary*, half the length of the *exterior* one; when forcibly expanded they are nearly round, but in their natural state oblong, and deeply concave, with an emarginate apex, and incurved, ensiform point.—*Filaments* in both flowers five, with sometimes the rudiment of a sixth. *Anthers* in the male-hermaphrodite linear, and as long as the filaments; in the female-hermaphrodite minute, and without pollen.—*Germ* inferior, oblong, three-celled, with from four to five or six rows of ovula in each cell, regularly attached to a central, fleshy receptacle axis; by their growth they are forced from the regular situation in which they are found in the germ, their insertions cannot then be easily traced; in the male-hermaphrodite they are abortive. *Style* cylindric. *Stigma* three-lobed, large and clammy.—*Berry* oblong, tapering to each end; of a soft fleshy consistence, smooth and yellow, marked longitudinally with five ribs, three-celled; the partitions distinct, but soft and pulpy, and no doubt disappear when dry, and long kept.—*Seeds* numerous, the size of a small pea, round, turbinate, tubercled; the *exterior* half dark-chesnut or blackish toward the umbilicus, which is a large circular cavity; light brown. *Integument*, &c. as described and figured by Gaertner, *Carp.* i. 28. 9. t. 11.

2. *M. coccinea*, Andr. Repos. i. 47.

*Spadix* and *spathes* straight, the latter one- or two-flowered, and permanent.

*Chin.* Ou-ang-chok-chee.

This has been brought from China, where it is said to be indigenous. It thrives well in the Company's botanic garden at Calcutta, where I long took it for the *banana* in a dwarf state; a state the Chinese have the art of reducing most plants to; but now, after repeated examination for many years, I find it is undoubtedly a permanently distinct species. It resembles the *Banana* and *Plantain* in habit, and in its perennial root.

*Stem* erect, generally three or four feet high, and about as thick as a man's arm. Like the other species they perish soon after fructification, and like them, are succeeded by shoots from the root.—*Leaves* linear, &c. as in *M. Sapientum*.—*Spadix* erect.—*Spathes* linear-oblong, boat-shaped, erect, obtuse, both sides smooth, and of a bright scarlet colour; all are permanent, and embrace one, or at most two flowers.—*Flowers*, the inferior ones are female-hermaphrodite and fertile. The superior ones male-hermaphrodite and abortive. With Gaertner I consider the corol as two-petalled in this genus, (and not as a nectary;) and in this species it is particularly so. In *M. Sapientum* the two ovate scales over the inside of the fissures of the exterior petal may be called *nectarial*. *Petals* two, as long as the stamens, somewhat ringent; the *exterior* one involving the interior like a spathe, its apex three-parted; the lateral divisions thereof ending in a slender hornlet; the middle one is broader and three-parted; soon after expansion they become reflected, then revolute. *Interior* petal nearly as long as the exterior, apex sometimes entire, sometimes three-parted.—*Filaments* uniformly five, surrounding three-fourths of the style. *Anthers* in the male-hermaphrodite flowers linear, about as long as the filaments, with a deep polliferous groove on each margin; those of the fertile, or female-hermaphrodite flowers are small, and totally destitute of pollen.—*Germ* inferior, oblong, three-celled, &c. *Style* as long as the stamens. *Stigma* oval, ob-



scurely three-lobed.—*Pericarp* of the male-hermaphrodite flowers abortive, of the female-hermaphrodite ones fertile, oblong, and a little compressed, pulpy, about two inches long, and less than one broad, when ripe yellow, divided internally into three cells, with a double row of seeds in each, these seeds however rarely come to maturity here.

The plant is highly ornamental, which so far as I know, is all that can be said in its favor.

### *S M ornata, R.*

*Spadix* erect : *spathes* deciduous, three-flowered, lanceolate. Both petals of the corols equal in length.

*Beng* Ramanigee-kula.

A native of Chittagong, where this and some other sorts are commonly called monkeys plantains. Except in size and manner of flowering, this species does not in any respect differ from the common cultivated sorts already well known. In the botanic garden at Calcutta, they blossom and ripen their seeds the whole year.

*Root* perennial, pushing forth a successions of stems every way like those of the cultivated sorts, only about as thick as a man's arm, and in general, in a rich soil from three to five feet high.—*Leaves* petioled, &c. as the common plantain.—*Spadix* erect.—*Spathes* partial, alternate, boat-shaped, broad-lanceolate, obtuse, smooth, striated, colour a most lovely light purple or lilac, two- or three-flowered, deciduous, length from four to six inches.—*Flowers*, the inferior five or six *spathes* are occupied by female-hermaphrodite ones, all the rest, (and they are very numerous,) by male-hermaphrodite ones; all are orange-coloured.—*Corol* two-petalled, the exterior one irregularly five-toothed, the lateral segments with calcarate apices. The *inner* petal is as long as the exterior one, thin, and membranaceous.—*Filaments* five, in some flowers there is the minute rudiment of a sixth. *Anthers* in the male-hermaphrodite flowers linear, as long as the filaments, in the female ones most minute and abortive.—*Germ* inferior, in the female-hermaphrodite flowers large, and linear-oblong, with three most

distinct cells, &c. in the male one minute. *Style* in the former twice as long as the filaments, with a large clammy *stigma*; in the latter shorter than the stamens, very slender, and with scarcely any *stigma* at all,—*Berry* linear-oblong, slightly incurved, obscurely four- or five-sided, with the angles much rounded, smooth, fleshy, when ripe dull yellowish green, about the size of a man's little finger, three-celled.—*Seeds* many in a single row in each cell, compressed, tending to be quadrangular, tubercled, very black, inserted into the soft fleshy partitions. *Perisperm* and *embryo* as in the former species.

A very pretty ornamental plant,\* and would no doubt be much admired in Europe.

#### 4. *M. superba*, R.

*Root* fibrous and perishing with the short conical stem. *Leaves* petioled, but not sheathing. *Spadix* nodding. *Spathes* cordate, many-flowered, those of the female-hermaphrodite flower permanent.

A native of the vallies of the southern parts of the peninsula of India. From Dindigul Dr. Anderson of Madras received it into his garden and from thence introduced into the botanic garden at Calcutta, where the plants thrive, blossom and ripen their seeds at various times of the year.

*Trunk* almost conical, being only three feet to the leaves, seven and half in circumference close to the ground, and four and half immediately under the leaves; and invested with the numerous, somewhat stem-clasping bases of those that have decayed; height of the whole plant to the highest part of the curvature of the spadix, thirteen feet.—*Leaves* numerous, equally surrounding every part of the stem, petioled, lanceolate, very entire, until broken by wind, &c. filiform, pointed, smooth on both sides, with numerous parallel, diverging veins; from five to ten feet long, and from two to three broad.—*Petioles* about two feet long; those of the lower leaves have their bases broad and embrace the stem; while those near the inflores-

\* This is probably *M. rosacea*, Jacqu. which has been well figured in *Betun. Regist. ix.* 796. A and B.—N. W.

cence have long, stem-clasping sheaths; like those of the *plantain* and *banana*; semi-cylindric on the under side, and deeply channelled on the upper one.—*Spadix* terminal, simple, drooping, before any of the spathes expand cordate.—*Spathes* numerous, expanding in succession, broad-cordate, slightly ribbed, smooth, ferruginous, many-flowered, permanent, and not becoming revolute.—*Flowers* numerous, from twenty to thirty in a double series to each spathe; the *female-hermaphrodite* ones occupy the bases, or lower spathes; and the *male-hermaphrodite* ones the superior.—*Perianth* none.—*Corol*; *petals* two, very unequal. *Exterior petal* involving the inner one like a spathe, leathery, three-parted; the linear divisions often adhering by their margins; soon after expansion they become twisted into one body. *Inner petal* five or six times shorter than the exterior one, pale-coloured, almost pellucid, and composed of two sub-rotund lobes with an ensiform process between them; from the inside of the insertion of this petal a very large quantity of transparent jelly is discharged.—*Nectary* two filiform scales inserted over the two fissures of the exterior petal. Thus far the male and female-hermaphrodite flowers agree.—*Filaments* five, with the rudiment of a sixth on the underside. *Anthers* in the male-hermaphrodite flower longer and thicker than the filaments. In the female-hermaphrodite they are wanting, or only small, black, withered points.—*Germ* beneath. In the female-hermaphrodite flower large, three-celled, and fertile; in the male one small, and barren. *Style* linear, thick, and fleshy. In the female-hermaphrodite flower twice as long as its barren stamens. In the male-hermaphrodite one only half the length of the fertile stamens. *Stigma* in both somewhat three-grooved, and obscurely six-lobed, clammy.—*Pericarp*. *Berry* oblong, size of a goose egg, smooth, three-celled, when ripe nearly dry, so little pulp is there on the fruit of this species.—*Seeds* numerous, angular, and black.—*Perisperm* and *embryo* as in the former species.

5. *M. glauca*, R.

*Root* fibrous, and perishing with the columnar stem. *Spadix* drooping, spathes ovate-lanceolate, imbricated, from ten- to twenty-

flowered, permanent; those of the male-hermaphrodite flowers withering.

A very stately, elegant, perfectly distinct, strongly marked species, a native of Pegu, and from thence introduced, by the discoverer, Mr. F. Carey, into the botanic garden at Calcutta, where it blossoms in May, and the seeds ripen in October and November. Like my *M. superba* it never produces suckers, consequently it must be reared from the seed, which it furnishes in great abundance; the fruit containing little else, even fit for a monkey to eat. The whole plant has a pale glaucous appearance which, with its columnar stem and total want of suckers, readily distinguish this from all the other *Musæ* known to me.

*Root* fibrous, about triennial, for like that of my *superba*, it perishes with the plant, when it has perfected its seed, and not like the cultivated sorts, tuberous, permanent, and furnishing a succession of suckers, by which they are quickly and abundantly propagated.—*Stem* simple, erect, columnar, from ten to twelve feet high and about two feet in circumference.—*Leaves* numerous round the apex of the stem, &c. as in *M. Sapientum*.—*Spadix* in this species rather long-peduncled, perfectly pendulous, base occupied with fertile female-hermaphrodite flowers, which are completely hid under the permanent, ovate-lanceolate spathes; the barren or male-hermaphrodite flowers occupy all the rest to the very apex, and continue to blossom in succession until the seeds are ripe, by which time this part greatly exceeds in length the fertile part, and continues covered with the withered, but permanent spathes.\*—*Corol, stamina,* and *pistillum*, as in *M. Sapientum*, &c.—*Berries* trigonally clavate, as thick as a cucumber, and about four or five inches long, smooth, striated lengthways with small veins, colour when ripe a mixture of green yellow and pink, three-celled.—*Seeds*, rather *Nuts*, a few in each cell, oval, size of a field bean. *Integument* a perfect, hard, black, substantial nut, divided into three transverse cells, the up-

\* This part the end of the pendulous inflorescence sometimes becomes enlarged and flattened like the top of the stem of *Celosia cristata*.—N. W.

permost and lowermost filled with spongy matter, the middle one is occupied by the friable white *perisperm*, in the middle of the base thereof is lodged the small, simple, short, sub-obconic embryo, the whole nearly as in *Gaertner's Sapientum*, carp. i. 28. t. 11. f. 1.

6. *M. nepalensis*, Wall.

*Stem* lengthened and sheathed, conical. *Leaves* spreading in all directions on short petiols. *Spadix* slightly nodding.

Newar Gompoo kula.

I have found it in various parts of Nipal from Becheaco to the valley, growing on the smaller mountains, and delighting in dense, shady forests. It commences blossoming as soon as the rainy season sets in and ripens its fruit during the close of it.

*Trunk* short, cone-shaped, very thick at the base, measuring as far as two feet in diameter, covered with the withered bases of the old petiols; from thence tapering gradually towards the top where the leaves are fewer, more distant and much smaller; the height scarcely exceeds five or six feet.—The leaves as in *M. superba* rather smaller and somewhat glaucous; the uppermost become gradually very short, until they at length change into barren spathes.—*Petiols* decurrent and sheathing, as those of *M. glauca*.—*Inflorescence* very large and showy, clavate, nodding; before expansion closely imbricate like a large cabbage; *spathes* withering, deep purple and furfuraceous within; their apex recurved, mostly two-lobed.—*Flowers* yellowish, placed in two rows within each spathe, seven or eight in a row, two inches and a half long.—*Hermaphrodite perianthium* double, membranous and sub-diaphanous; *exterior* one-leaved, deeply but unequally three-cleft, unilateral; lobes linear, spiral, hanging down loosely with their apices twisted together in a cylinder, bases distinct; before expansion they are sub-valvate, uniting together in a cylinder which is marked with three blunt angles; the uppermost fissures proceeding almost to the base, where it widens and receives the base of the superior leaflet of the inner perianthium. The *inner* one consists of three distinct leaflets; the *middle* or *uppermost* of which is

rounded, concave, obtuse, two-lobed, with an intermediate, spear-shaped long process; its direction is ascending and opposite to the outer perianth, scarcely exceeding one-half of its length; it is about half an inch broad, of a remarkably tough fabric, colourless and semi-pellucid, the inside of its base covered with a limpid and insipid gelatine; during aestivation it embraces the two upper filaments;—the *lateral leaflets* are linear, almost capillary, spreading, a little shorter than the segments of the exterior perianth, between which, just below the fissures, they are inserted.—*Stamina* always five with a rudiment of a sterile sixth one, inserted in a simple series round the vertex of the ovarium, as long as the perianth; *filaments* subulate, fleshy; *anthers* linear, recurved, two-celled, occupying the outer two-thirds of the filaments, with crispate purplish valves, and large, globular, pale pollen. The *sterile stamen* consists of a short, subulate, sub-capitate filament, concealed under the upper leaflet of the inner perianth (or the upper lip of the flower) within the base of which it is inserted.—*Ovary* oblong, indistinctly three-sided, slightly curved, three-celled; ovula embedded in pulp and inserted in all directions.—*Style* short, tapering, fleshy; *stigma* obscurely divided into five or six lobes.—The *inferior* or fertile (*female*) flowers, as far as I could judge from the withered remains appeared to agree entirely with those of *M. superba*. *Pericarp* precisely as in that plant.

*Obs.* I am doubtful if this plant ought to be considered as distinct from *M. superba*, or as an intermediate species between that and *M. glauca*; differing from the former in the sheathing petiols, and from the latter in its stature and inflorescence. I shall better be able to determine its character when the plants of it, which I brought down with me, and which thrive very well in the Hon. Comp. botanic garden, shall begin to blossom. All these species are extremely grand and ornamental when they have attained their full growth and the inflorescence has opened, so as to allow of the flowers being seen from without. Soon after this period they gradually decay until their appearance, at the time when the fruit is getting ripe, becomes quite the reverse of beautiful.—The figure of Bruce's *Ensete* (Travels v.

Append. 36. t. ii.) looks very much like these plants, but his description, imperfect as it is, does not admit of its being considered as a congener; still Gmelin makes it a *Musa* (*M. Ensete*) in his edit. of *Syst. Naturæ*, ii. 567.—The hardy natives of Nipal eat the fruit, although it contains little else than hard seeds.—N. W.

### *HELICONIA*, Schreb. gen. 403.

*Spathes* alternate. *Calyx* none. *Corol* six-petalled. *Nectary* one-leaved. *Germ* inferior, three-celled; *cells* with one or more seeds; attachment inferior. *Pericarp* three-celled, three-valved, seed solitary, or several.

#### 1. *H. buccinata*, R.

Stemless. *Leaves* lanceolar, glossy. *Spadix* central, flexuose, pubescent; *spathes* from six to eight, bifarious, diverging, each embracing from six to ten pedicelled flowers. *Nectary* oblong; *cells* of the germ one-seeded.

*Folium buccinatum*, *Rumph. amb.* v. 141. t. 62. f. 2.\*

From Amboyna plants were brought to the botanic garden at Calcutta, in 1798, where in seven years they began to blossom during the hot season, viz. April and May; but have not yet ripened their seed in Bengal.

*Root* consisting of numerous, strong, fleshy fibres, like the common *banana*, and still more permanent than in any species of *Musa* known to me.—*Stem* no other than the united sheathing part of the petioles, except when in flower the scape then rises through their centre.—*Leaves* in numerous bundles from the same root, forming an immense, beautiful bush; bifarious, petioled, lanceolate, entire, polished, acute, with diverging veins, from two to four feet long, and one

\* This quotation is correct, for Rumphius is obviously mistaken in referring this figure to his *Folium buccinatum asperum*, which seems to be represented by fig. f. i.—Lamarck confounds both plants under his *Heliconia indica* (*Encycl. bot.* i. 427.) Our plant has not for many years blossomed in the botanic garden owing perhaps, to its being chiefly multiplied by separating the offsets.—N. W.

foot broad. Rib protuberant, and pale.—*Petioles* from three to six feet long, the lower half sheathing, those within smooth in every part.—*Scape* rising through the centre of the sheathing of the petioles, and elevated but little above them.—*Spadix* about a foot long, flexuose, hairy, compound, of from six to ten, alternate, bifarious branches.—*Spathes* from six to ten, alternate, bifarious, diverging, smooth, lanceolate, boat-shaped, each embracing a small raceme, of from six to twelve, pedicelled, pretty large, pale yellow flowers, which expand in succession.—*Bractes* numerous, bifarious, imbricated, linear-lanceolate, acute, villous, each of the most inferior ones embraces a single flower; the superior ones are smaller and abortive.—*Calyx* none, except what I take for the corol be so called.—*Petals* from six to three interior, and three exterior, unequal in breadth, but of the same length, linear-lanceolate, all united at the base. *Nectary* or sterile-stamen, a single, oblong, acute leaflet, inserted on the base of the largest of the three exterior petals, and into this petal no stamen is inserted.—*Filaments* five, inserted on the base of the petals on the inside. *Anthers* linear, erect, with their apices nearly as high as the stigma.—*Germ* pedicelled, inferior, three-sided, three-celled, with one ovulum in each, attached to the bottom of its cell. *Style* nearly as long as the petals. *Stigma* simple.

*ACHYRANTHES*, Schreb. gen. 404.

*Calyx* five-leaved, and calyced. *Corol* none. *Nectary* and *stigma* various. *Germ* superior, one-celled, one-seeded, attachment inferior. *Capsule* utricular, one-seeded. *Embryo* annular, with central perisperm.

1. *A. incana*, R.

Annual, erect, hoary. *Leaves* lanceolar. *Spikes* paniced, terminal. *Nectary* ten-toothed.

*Illecebrum javanicum*, Willd. spec. i. 1205.

*Iresine javanica*, Burm. ind. 212, (by mistake 312) tab. 65. f. 2.



Found wild in various parts of India, in flower, and with ripe seed most part of the year.

*Stems* nearly erect. *Branches* few, and nearly erect, all the most tender parts very hoary, indeed white; general height from three to five feet.—*Leaves* alternate, sub-sessile, narrow-lanceolate, entire, hoary.—*Panicles* terminal, composed of, alternate, sessile, incurved, cylindric *spikes*, completely crowded with numerous, small, white flowers.—*Calyx* two or three, broader, smooth, hyaline scales. *Calyx* five-leaved; *leaflets* lanceolate, hyaline, very woolly toward the base on the outside; three of the five rather narrower, and with a little green in the centre.—*Nectary* a short, ten-toothed cup round the germ.—*Filaments* no other than the teeth of the nectary. *Anthers* could not be detected, yet the seeds are fertile.—*Germ* superior, obcordate, one-celled, one-seeded. *Style* short. *Stigma* two-cleft; *segments* hairy, and recurved in opposite direction.—*Utriculus* an entire, one-celled membrane.—*Seeds* solitary.

*Obs.* From the above description it appears evident that this plant is clearly an *Achyranthes*; having the entire membranaceous utricular capsules of that genus, containing a single, lenticular, reniform, highly polished seed, with central perisperm, and peripheral embryo.\*

2. *A. aspera*, Willd. spec. i. 1191.

Biennial, sub-erect, ramous. *Leaves* opposite, obovate, downy. *Spikes* most long, with flowers retrofracted.

*Sung.* अपामार्गः, Upamarga, सैखरिकः, Shikhurika, धामार्गः, Dhamargava, मयूरकः, Muyoorka, प्रत्यक्षपर्णी, Prutyukpurnee, कीसपर्णी, Keeshupurnee, किंछिहो, Kinchee, खरमञ्जहो, Khuramunjuree, सिख्यङ्गा, Shikhyunga, अपधः, Upudha, शल्यः, Shulya, मर्कटी, Markutee, दुर्यंहा, Doorgruha, शिखरो, Shikhuree, प्रत्यक्षपुष्पी, Prutyukpooshee, काण्डाकण्डः, Kandakuuta, दुरभियंहा, Doorubhigruha, वशिरः, Vushira, पराक्षपुष्पी, Parakpooshee,

\* Jussieu considers this as belonging to *Aerva* of Forstael.—*A. javanica*, Syst. Veg. 565.—N. W.

कटो, Kutee, मर्कटपिप्पली, Murkutupippulee, कटुमञ्जरिका, Kutoomunjurika, घण्टो, Ghuntee, क्षरका, Kshuruka, पंक्तिकण्टकः, Punktikuntuka, मालाकण्टः, Malakunta, कुब्जः, Koobja.

Beng. Chichiria, Apang.

Cadelari, *Rheed. mal.* x. 155. t. 78.

*Amaranthus spicatus zeylanicus*, foliis obtusis, *Burm. zeyl.* 16: t. 50. f. 3.

A troublesome weed in every part of India, chiefly during the rainy and cold season, but in some measure all the year.

*Obs. by N. W.*

In Nipal I found this plant, rather commonly in the great valley, in ravines, blossoming during the rainy season.—N. W.

3. A. (*Centrostachys*, Wall.) *aquatica*, R.

Herbaceous, straggling to a great extent about the edges of sweet water. Leaves opposite, lanceolate. Spikes terminal. Flowers retrofracted. Bractes and scales of the calyx spinous.

*Celosia spinescens*, Koen. Mss.

A native of Coromandel, where it blossoms during the rainy season.

*Obs. by N. W.*

Mr. Brown alludes to this species, in *prodr. flor. nov. holl.* i. 417, as receding from the character of *Achyranthes*. Supported by his authority I propose detaching the plant into a new genus which may be called *Centrostachys* from its pungent inflorescence. It may be characterized in the following manner: *Perianthium* five-parted, pungent, supported by three unequal short membranous scales; its upper segment somewhat narrower and longer than the others, at length ascending. *Stamina* (five) united into a cup at the base, with alternating double scales; the outer ones fringed. *Anthers* two-celled. *Stigma* obtuse. *Utricle* one-seeded, oblong, evalvu-

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lar.—From *Achyranthes* it differs in the unequal, spinescent perianth, inoffensive scales, and oblong sub-reniform fruit; from *Nyssanthes*, Brown (ibid, l. 418) to which it comes still nearer, in the quinate parts of the flower, in all the filaments being united at the base, and in the soft, very thin scales.

I found it in great abundance on the margins of Tanks in the Tur-rayee, chiefly at Mooliyya, about ten miles from the Shala forest, between Soogolee and Bissoliya, in fruit in November. In the Hon. Company's botanic garden it has been introduced from Silhet and blossoms freely towards the close of the rainy season, ripening its fruit in December.

Native name at Silhet, Hooet (হুট).

*Stems* several, growing to many feet in length, as thick as a man's thumb, round, creeping, sometimes floating at the base, scabrous, with a number of small elevated dots, slightly furrowed; joints a little contracted, purplish, the lowermost sending forth a fascicle of capillary radicles.—*Branches* opposite, sub-simple, generally unequal in length, pubescent, ascending, as is also the end of the stem.—*Leaves* opposite, lanceolate, tapering, finely acuminate, acute at the base, entire, pubescent, from four to six inches long, with oblique hairy nerves; while young villous, greyish, as are also the tender branches.—*Petiol* slender, scarcely an inch long, furrowed, embracing the stem with a slightly elevated line.—*Spike* terminal, sessile, erect, from six to ten inches long, tapering, cylindric, as thick as a small finger.—*Rachis* round, villous.—*Flowers* large, numerous, scattered, approximate, sessile, spreading, supported by three small transparent, very thin, and membranous, smooth, ciliate bractes; the lower one adhering to the rachis, persistent, lanceolate, acute, slightly concave; the inner two much broader, sub-orbicular, imbricating, bluntish, falling off with the fruit-bearing perianth.—*Perianthium* consisting of five lanceolate, most spreading, tapering, acuminate, rigid and pungent segments, almost five-leaved, of a green colour, with membranous margins, perfectly smooth, striate, the uppermost a little longer and narrower. Soon after fecundation it becomes rigid-

ly deflected and shuts up in the form of a lengthened, shining, pointed cone, about one-third of an inch long, with gibbous base, supported by the persistent short bractes, and inserted on a fleshy rugose protuberance of the rachis; the upper segment ascends slightly in the form of a lid.—*Filaments* five, erect, somewhat shorter than the flower, yellow, shining, united at the base into a short cup.—*Anthers* erect, two-celled, orange-coloured. *Lobes* of the *nectary* rather shorter than the filaments, alternating with them, double; each consisting of two parallel membranous scales; the outer longer one fringed with long threads; the inner scale much shorter but broader, blunt, entire. *Ovary* oblong, obtuse, yellowish, smooth, longer than the cup formed of the bases of the filaments and nectary, one-celled, its ample cavity containing at the top a reniform *ovulum* which is inserted by one end to the apex of a long, fleshy, thread-shaped, free *placenta*, which rises from the bottom of the cavity.—*Style* equalling the stamina, slender, smooth. *Stigma* entire, small, obtuse; appearing capitate when dried.—*Utriculus* shining, oblong, sub-reniform, perfectly smooth, about two lines long. *Placenta* flattened.—*Seed* reniform, lucid, occupying the whole cavity. *Perisperm* snow-white, forming about one-half of the seed, friable, consisting of a number of large, subulate or oblong bodies.—*Embryo* very large, almost entirely orbicular; cotyledons elongated; radicle ascending, protruding near the hilum of the seed, in other respect precisely like *Achyranthes lep-pacea*, in Gærtner's carpology, ii. 214. t. 128.—N. W.

4. *A. Monsoniæ*, R.

Tetrandrous, cespitose, very ramous. *Leaves* subulate, tufted; *spikes* terminal, sub-cylindric.

*I. lecebrum Monsoniæ*, Linn. Suppl. 161.

*Celosia Monsoniæ*, Retz. obs. 2. p. 13. Willd. spec. i. 1200; and Ait. kew. i. 288.

*Amaranthoides spicatum* Spergulæ foliis, Pluck. Almag. Mantiss. 11. t. 334. f. 4.—Almath. 13. t. 357. f. 4.

A native of Bengal and Coromandel, where it blossoms during the cool season.

*Stem* none, but numerous branches, with opposite, diverging, round, somewhat woolly branchlets, spreading close on the ground and extending to from one to three feet in length.—*Leaves* subulate, opposite, sessile, with tufts of smaller ones in their axils.—*Spikes* terminal, ovate-oblong, compact, being closely covered with numerous, minute, rose-coloured flowers.—*Calyx* and *calycle* seven-leaved.—*Nectary* four-leaved, alternate with the stamens.—*Stamens* four.—*Utricules* with a single seed.

5. *A. lappacea*, Willd. spec. i. 1192 \*

Biennial, straggling. *Leaves* opposite, petioled, ventricose-oblong, smooth. *Spikes* terminal; *flowers* remote, generally in pairs, with three fascicles of coloured, hooked bristles to the pair.

Willia-codiveli, Rheed. mal. x. 117. t. 59.

*Blitum scandens*, fructu lappacco, Burm. zeyl. 47. t. 18. f. 1. (good.)

Beng. Kuya-duya, Duya-kuya.

Is found in most parts of India, generally growing among bushes. Flowering time the rainy season.

Obs. by N. W.

This species I have found at Singapore and Pinang, in flower and fruit from September to November. In Nipal I found it at Hettounra in November. It is difficult to distinguish among the two species which De Candolle has established on Linneus's plant, viz. *Desmochaeta atropurpurea* and *flavescens*, and *D. patula*, Linn. (Syst. Veg. v. 550.)

6. *A. alternifolia*, Herb. Banks.

Annual, diffuse. *Leaves* alternate, ovate-oblong. *Spikes* axillary, longer than their leaves, two variously horned bodies between the corol and calyx. *Nectary* none.

Beng. Luta-mohooriya, Gungatiya.

\* *Desmochaeta*, De Candolle.—N. W.

*Teling*. Chancheli kura.

Annual, common on most cultivated lands, in the botanic garden at Calcutta it is a most troublesome weed.

*Stem* when the plant is young, tolerably erect, but ever afterwards prostrate, with longer, prostrate, striated, succulent branches.—*Leaves* alternate, petioled, oblong, or ovate, pointed, sometimes a little waved, margins coloured; below a little hairy, about two inches long.—*Petioles* channelled.—*Spikes* axillary, twice as long as the leaves or more.—*Flowers* solitary, alternate, small, red.—*Bractes* three-fold, concave, one-flowered; immediately within each of the two lateral bractes is a compressed, ramous, green body.—*Calyx* five-eaved; the inner segments three-coloured.—*Nectary* no other than the enlarged bases of the filaments.—*Seed* single, in its rugose utriculus.

The leaves and tender tops are used by the natives in their Curries. It ought to be carefully compared with *A. muricata*.\*

7. *A. prostrata*, Willd. spec. i. 1194.

Annual, diffuse. *Leaves* opposite. *Spikes* filiform. *Flowers* reflexed, with fascicles of bristles adjoining. *Nectary* with five bidentate horns, alternating with the filaments.

Scheru-cadelari, *Rheed. mal.* x. 157. t. 79.

Auris canina femina, *Rumph. amb.* vi. 26. t. 11.

Introduced into the botanic garden at Calcutta, amongst spice plants from the Moluccas. Flowers during the cold season.

*Root* ramous, annual.—*Stem* scarcely any, but several pairs of opposite, diffuse, round, smooth, coloured branches.—*Leaves* opposite, sessile, oblong, entire, coloured.—*Spikes* terminal, solitary, filiform, sub-erect.—*Flowers* scattered, reflected, generally two together.—*Bractes* (or calyx) three to the two flowers, with the same number of fascicles of hooked red bristles as in *A. lappacea*.—*Nectary* with five, two-toothed hornlets, alternate with the filaments, and with them

\* This may be either *Desmochaeta muricata*, or *alternifolia*, De Cand. (Syst. Veg. v. 552-3), or both.—*Digera arvensis*, Forsk. (*A. polygonoides*, Retz.) is very little if at all different.—N. W.

united into a membranous ring round the base of the germ.—*Germ* sub-pedicelled. *Style* single.\*

8. *A. sericea*, Koen. Mss.

*Stem* erect, downy. *Leaves* opposite, broad-lanceolate, covered with much silky down. *Peduncles* axillary, longer than the leaves, bifid or trifid, many-flowered.

A large, straggling annual, growing in sheltered shady places in a dry sandy soil.

*Root* single.—*Stem* erect, with many long spreading branches resting on the ground, or something else; all are round, and covered with silky down.—*Leaves* opposite, petioled, broad-cordate, acute, covered with very soft silky down, about an inch and half long.—*Peduncles* axillary, opposite, round, downy, as long as the leaves, each ending in two, three, or more, spreading, winding tilliform spikes. The rest as in the genus.

9. *A. ferruginea*, R.†

Annual, flaccid. *Leaves* opposite, obovate. *Spikes* sub-conical, peduncled and sessile. *Nectary* five-toothed; each tooth ending in a proper antheriferous filament. *Stigmas* entire.

*Beng.* Rukta-Sirinchee.

*Hind.* Lal-Sirinchee.

A small annual, wild in gardens, or about the borders of cultivated lands near Calcutta, where it appears during the rainy season.

*Stems* slender, leaning, about a foot long, absolutely four- or five-sided, smooth, rust-coloured. *Branches* opposite, and like the stem.—*Leaves* opposite, short-petioled, oval or obovate, entire, smooth, of a very soft texture, reddish, about an inch long.—*Spikes* peduncled, or sessile, small, conical.—*Peduncles* four-sided, length

\* *A. (Desmochaeta) repens*, Roth. nov. spec. 167; Syst. Veg. v. 552, of which specimens are preserved in Dr. Heyne's collection, comes very near to this plant, which is a *Desm.* as justly observed by the accurate Roth. Its copious pubescence distinguishes it readily.—N.W.

† *Philoxerus* Brown? The anthers, however, are two-celled, and the stigma entire in Roxburgh's plant.—N. W.

various.—*Bractes* in general two, opposite, leaf-like, but much smaller.—*Flowers* crowded, small, dull red.—*Calycle* three-leaved, the two lateral ones falling off with the five-leaved calyx and seed; the third or undermost one remains. There may be an impropriety in calling these the calycles.—*Nectary* cup-shaped, five-toothed, teeth lengthened into five filaments.—*Stigma* simple.—*Seed* solitary, in a membranaceous utriculus.

#### 10. *A. scandens*, R.

Perennial, climbing, downy. *Leaves* alternate, oblong-ventricose. *Spikes* axillary, solitary, sessile. *Calyx* hairy. *Nectary* ten-parted. *Stigma* two-lobed.

Beng. Nooriya.

A native of hedges, &c. near Calcutta; in flower about the close of the rains.

*Stems* and *branches* climbing, below woody, perennial; young parts more or less hairy.—*Leaves* alternate, short-petioled, oblong, a little ventricose, hairy, and of a soft texture; size very various.—*Spikes* sessile, axillary, and terminal; those from the axills small, and solitary; while the terminal ones are large, and generally three or more of them together.—*Calyx* and *calycle* silver-coloured, and woolly:—*Nectary* ten-toothed; *teeth* equal, alternately antheriferous.—*Style* single. *Stigma* two-lobed.—*Capsules* circumcised, containing a single, black, smooth reniform seed.\*

#### 11. *A. lanata*, R.†

Annual, erect, ramous, woolly. *Leaves* alternate, orbicular.

\* It has been remarked by Dr. Schultes that this is probably the same as *Gomphrena amaranthoides*, Roth. (Nov. spec. 182; Syst. Veg. v. 541.) But the latter denies its having the sterile filaments which ours has. I found it, or one coming near to it, at Hetonnra in Nipal, in flower in November; it was also brought to me in March from Noakote.—The late Dr. Jack found it at Acheen.—N. W.

† *Aerva* Juss.—Syst. Veg. l. c. 564.—N. W.



*Spikes* crowded. *Nectary* ten-parted, alternately antheriferous. *Stigmas* two-cleft.

*Illecebrum lanatum*, Willd spec. i. 1204.

Scheru-bula, *Rheed. mal.* x. 57. t. 29. (good.)

*Chenopodium incanum*, racemosum, folio majore minori opposito, *Burm. zeyl.* 60. t. 26. f. i. (good.)

Beng. Chaya.

Is common every where, both on the Coast of Coromandel and Bengal.

A stout, hardy, annual plant, from one to two feet high, flowering all the year round.—*Stems* erect, with many ascending, woolly branches.—*Leaves* alternate, petioled, roundish, with somewhat of a point, and tapering at the base, entire, woolly on both sides; size very various.—*Calyx* woolly.—*Nectary* ten-toothed, as in *A. scandens*.—*Spikes* axillary, oval, woolly.—*Stigma* two-lobed.—*Capsules* with a single, smooth, shining black, reniform seed.

*Obs.* The late edition of the spec. plant. by Reichard, makes this plant an *Illecebrum*; for what reason I know not.

## 12. *A. diandra*, R.\*

Annual, diffuse. *Leaves* opposite, linear-lanceolar. *Spikes* terminal; *flowers* reflected, and pressed close to the rachis. *Stamina* two, alternate with the two multifid lobes of the nectary.

A native of Ceylon.

*Root* fibrous, annual, or at most biennial.—*Stems* slender, straggling, striated, clothed with a few hairs pointing forward.—*Leaves* opposite, short-petioled, linear-lanceolate, entire, nearly smooth.—*Spikes* terminal, solitary, simple, long, and slender.—*Flowers* solitary, small, after blossoming reflected back close to the rachis.—*Bractes* (calyx?) three-leaved.—*Calyx* of five, rigid, smooth tapering, acute leaflets.—*Nectary* two-lobed; lobes finely and deeply multifid.—*Fi-*

\* *Centrostachys*, Wall.—N. W.

aments two, one in each fissure of the nectary, half as long as the corol. Anthers incumbent.—Utriculus turbinate. Seed solitary.

13. *A. triandra*, R.\*

Annual, creeping. Leaves opposite, sessile, lanceolate, smooth. Flowers triandrous. Capsules winged.

Illecebrum sessile, Willd. spec. i. 1209.

Coluppa, Rheid. mal. x. 21. t. 11.

Amaranthus humilis foliis oppositis, flosculis in alis conglomeratis, Burm. zeyl. 17. t. 4. f. 2. (good.)

Telinga. Ponagunta-kura.

Sung. शालाचि, Shalanchi.

Beng. Shanchi, also shalooncha.

A native of Bengal where it is a common weed during the rainy season.

14. *A. nodiflora*, R.

Annual, diffuse. Leaves obovate, cuneate. Spikes globular. Nectary with only five, antheriferous divisions. Stigma simple.

Celosia nodiflora, Willd. spec. i. 1202.

Amaranthoides indicum, nodiflorum, capitulis ex albo viridescentibus, Burm. zeyl. 16. t. 5. f. 2.

A native of Coromandel. Flowers in the cold season. The ovarium in this plant contains but a single ovulum, attached to the bottom of its single cell, consequently its place is in this genus to which I have transferred it.†

\* Alternanthera sessilis, Brown.—Syst. Veg. l. c. 554. I have found it at Pinang.—It is also common at Silhet.—N. W.

† Roxburgh's plant seems to differ both from Alternanthera, denticulata, and nodiflora, Brown.—Perhaps the variety with obversely lanceolate leaves, recorded by Roth. Nov. spec., 174, belongs to it.—N. W.

*Additional species by N. W.*15. *A. (Desmochaeta) sequax, Wall.*

Suffruticose, straggling and leaning, densely clothed with soft tomentum. *Leaves* opposite, ovate-lanceolate. *Spikes* consisting of glomerated, bearded fascicles. All the bractes and the outer segments of the perianth terminating in bristles which becomes very long as the fruit ripens.

I have found this in various parts of Nipal delighting in exposed rather elevated situations, in flower during the rainy season, and ripening its seed during the month of November. It has also been brought to me from much higher situations in the direction towards Gosain-Tsin.

A straggling, brachy plant, covered on all its parts with thick, soft tomentum, becoming smoother by age.—*Stem* as thick as a goose quill, obtusely four-cornered, jointed; joints swelled, often five inches distant. *Branches* opposite. *Leaves* ovate-lanceolate, tapering, acuminate, with a roundish, or sub-acute base, perfectly entire, from three to six inches long, generally exceeding the interstices, villous above, nerved and densely tomentose underneath, almost smooth when old.—*Petiol* half an inch long, villous.—*Spikes* peduncled, terminal, lengthened, consisting of numerous globular, compound, sessile fascicles, the uppermost crowded; those below remote, each separate one containing three or four flowers. *Bractes* ovate, hairy on the back and margins, as well as the two outer segments of the perianth ending in a shining hooked bristle, which becomes very long and of a yellow colour when the fruit ripens; the fascicles forming large rounded heads of bristles, resembling those of *Arctium Lappa*, and attaching themselves to whatever comes in contact with the plant. *Perianth* bearded towards the apex and on the dorsal ribs.—Barren filaments fimbriated. *Anthers* long, linear, two-celled. *Style* longish. *Stigma* obtuse. *Utriculus* with two opposite nerves, bursting rather regularly at the base. *Seed* ovate, shining.—N. W.

16. *A. (Desmochaeta) orbiculata*, Herb. Heyne.

Villous. *Stem* prostrate. *Leaves* orbicular, retuse, acute at the base, short-petioled, densely villous while young, becoming smoother by age. *Fascicles* densely tomentose, many-flowered, globular, remote, with very long, brown bristles.

Specimens are preserved in Dr. Heyne's herbarium gathered probably at Courtallum.

It comes near to *D. patula*, (*Syst. veg.* v. 550.) which De Candolle joins with his *D. flavescens*; but differs abundantly in its prostrate habit and the figure of the leaves.—N. W.

17. *A. nuda*, Herb. Heyne.

Shrubby? branchy, divaricate, dichotomous. *Leaves* lanceolate, tapering, cuspidate, smooth. *Petiols* pubescent. *Spikes* axillary and from the bifurcations, short, hispid. *Flowers* gibbous at the base. *Bractes* cuspidate. *Perianth* pungent, ribbed nearly equal. *Tube* of the *filaments* naked, short. *Anthers* two-celled. *Stigma* obtuse. Specimens of this are preserved in Dr. Heyne's collection without any habitat being indicated. It seems intermediate between *Achyranthes*, *Nyssanthes*, and my *Centrostachys*. It varies with pubescent branches and leaves.—N. W.

## CELOSIA, Schreb. gen. 405.

*Calyx* five-leaved and calyced. *Corol* none. Nectary stamiferous, surrounding the base of the ovarium. *Germ* one-celled, *ovula* several, attached to the bottom of the cell. *Capsules* opening transversely and containing more seeds than one. *Embryo* annular, with a central perisperm.

1. *C. argentea*, Willd. spec. i. 1197.\*

Erect, annual. *Leaves* from lanceolate to oblong. *Spikes* sub-

\* I have found this growing wild in the valley of Nipal; probably introduced from the low-lands.—N. W.

cylindric, scariose. *Nectary* with five, short toothlets, alternate with the long antheriferous divisions.

*Beng.* Shwet moorga.

*Hind.* Debkotee.

*Tsjeria-belutta-adeka-manjen*, *Rheed. mal.* x. 77. t. 39.

*Belutta-adeka-manjen*, *Ibid.* 75 t. 38. I take for the same plant in its wild state; at least the wild plants of *argentea* found in the cornfields of India, are more stunted in their growth, but have their leaves broader, and the spikes shorter, as in the figure just quoted; and I am inclined to think Willdenow's *albida*, consequently Burman's *pyramidalis*, can, at most, be reckoned only another variety of the same species. Plants from the same seed have leaves of very various breadth, and are as often with, as without the falcate stipules.

2. *C. cristata*, *Willd. spec.* i. 1198.

Annual, erect. Leaves oblong-ovate, peduncled, round, striated. Spikes oblong.

*Sung.* वरिचूडा, *Vurhichoorā*; शिखिनो, *Shikhinee*, शिखालुः, *Shikhhaloo*, सुशिखा, *Sooshikha*, शिखो, *Shikhee*, शिखावला, *Shikhavula*, केकिशिखा, *Kekishikha*, मयूरशिखा, *Muyoorushikha*, खराशा, *Khurashwa*, कारवी, *Karavee*, दीप्यः, *Deepya*, मयूरः, *Muyoorā*, लोचमस्तकः, *Lochumustuka*, सहस्राङ्गिः, *Suhusranghri*, मधुच्छदा, *Mudhoochhuda*, नीलकण्ठशिखा, *Neelkunthushikha*, मयूरचूडा, *Muyooruchoora*, लोचमर्कटः, *Lochumarkuta*.

*Beng.* Lal-moorga, the red variety; Huldee-moorga, the yellow.

*Amaranthus vulgaris*, *Rumph. amb.* v. 236. t. 84.

I have never been able to find any other species or variety in India, that I could refer to *C. coccinea*. I cannot consider the breadth of the leaves, nor falcate stipules, to be any more characteristic in this than in *argentea* and its varieties.

In gardens only throughout India, and thrives best during the rainy and cold seasons.

3. *C. comosa*, Willd. spec. i. 1198.

Erect, annual. *Leaves* lanceolate. *Spikes* cylindric, tufted. Found in most parts of India in gardens, and like the last thrives best during the rainy and cold seasons.

4. *C. cernua*, R.

Annual, erect, ramous *Leaves* lanceolate, acute. *Racemes* terminal, cylindric, with long sterile, ramous, pendulous tails. *Capsules* operculated, many-seeded.

A native of the tops of the Rajmuhul hills, where Mr. W. Roxburgh first found it in great abundance wild amongst fragments of a rich Iron ore and from thence sent the seeds to the botanic garden at Calcutta, where it grows well, and continues in gaudy blossom, during the whole of the cold season.

*Root* annual.—*Stem* erect, with numerous, ascending, ramous branches, slightly striated, colour from green to a deep liver colour.—*Leaves* alternate, lanceolate, acute, smooth, entire, from one to six inches long, and broad in proportion.—*Stipules*, or rather the lower opposite pair of leaves of the branches and branchlets often present, and then falcate, as in *C. argentea*, &c. but I do not think their presence or absence can in any of the species found in India, be taken into the specific character; for in some plants they are tolerably constant, whereas in others of the same species reared from the same seed no sign of them can be traced.—*Racemes* terminal; the fertile flower-bearing part simple, cylindric, but curved from the weight of the long, pendulous, lovely crimson, sterile panicle into which they divide, and which gives to this charming species its great beauty.—*Flowers* numerous, short-peduncled, before and during expansion of a bright, vivid purple colour, but as the seed advances to maturity the margins of the scales become pure white, more or less broad.—*Bractes* tapering, acute, one larger under the base of the pedicel, and two on its apex, pressing the calyx laterally, and about half its length.—*Calyx*; *leaflets* dagger-pointed, rather longer than the stamina.—*Nectary* ten-parted, the five long, subulate, alternate ones are antheriferous, the

other five short and incurved over the germ.—*Stigma* slightly three-lobed.—*Capsules*; the lid is a little scabrous and marked with five elevations.—*Seeds* several, shining black.

This species appears to me to differ from *Retz. comosa* in the following points: 1st. Here the stamina and style are about the same length, and rather shorter than the calyx, there twice as long. 2d. Here are many, about eight seeds in the capsules; there only two.

5. *C. corymbosa*, Willd. spec. i. 1200.\*

Perennial, erect. *Leaves* opposite and fascicled, linear. *Corymbs* terminal. *Calyx* five-leaved. *Corol* five-petalled, no nectary. *Capsules* one-celled, three-valved; seeds many.

*Paronychia foliis ad genicula confertis, acutis, floribus umbellatis, Burm. zeyl. 184. t. 65. f. 2.*

*Telinga. Rajuma.*

Is a native of dry sandy lands. Flowers all the year round. This would better form a separate genus than a species of *Celosia*; probably it is one of Jussieu's *Caryophyllea*.

*Root* perennial.—*Stem* straight, frequently branchy, round, jointed, reddish, covered with white down; about a foot high.—*Leaves* opposite, sessile, linear, spreading, with fascicles of many smaller leaves in their axills.—*Stipules* generally four-fold, ensiform, membranaceous.—*Umbells* terminal, dichotomous.—*Calyx* five-leaved; *leaflets* lanceolate.—*Nectary*, or rather *corol*, of five, obcordate petals, alternate with the stamens.—*Filaments* inserted, alternate with the petals. *Style* short. *Stigma* three-lobed.—*Capsules* three-sided, one-celled, three-valved, opening from the apex.—*Seeds* from six to twelve or more, round.

Cattle are not fond of this species.

\* *Hagea*, Vent.; altered to *Lahaya* by Prof. Schultes in Syst. Veg. v. p. xxxi.—However consonant with rules of grammar such changes may be, they only serve to multiply the difficulties of botanical nomenclature. I imagine it can only be a particular dialect of the German language, which would pronounce *Hagea* like *Hakea*, or *Vallis* like *Phalaris*; yet has the name of the genus next before the last been altered to *Emericia*, in the above work, iv. p. 23. from similar motives and with equal impropriety.—N. W.

6. *C. polysperma*, R.

Annual. *Leaves* oblong, smooth. *Spikes* axillary. *Nectary* with only five antheriferous divisions. *Style* three-cleft. *Capsules* bacciform, evalvular, many-seeded.

A native of the Moluccas. It is an erect, smooth annual, with long, delicately thin leaves.

*DEERINGIA*, Brown. *prodr. nov. holl.* i. 413.

*Calyx* five-leaved. *Corol* none. *Filaments* having their base united into a little cup. *Germ* one-celled, many-seeded, attachment interior. *Berry* one-celled. *Seeds* a few, attached by their proper cords to the bottom of the cell.

1. *D. celosioides*, Brown, *loc. cit.*

Perennial, scandent. *Leaves* alternate, cordate. *Spikes* terminal, paniced. *Styles* three. *Berries* three-seeded.

*Celosia baccata*, Koen. in Retz. *obs.* 5. 23.

*Blitum frutescens*, Rumph. *amb.* v. 235. t. 83. f. 2.

Beng. Gola Mohunee.

Hind. Lutmun.

Found near Calcutta, flowering in the rains.

*Root* nearly spindle-formed, large, perennial.—*Stems* and *branches* one, two, or more fathoms long; perennial, climbing, striated, otherwise smooth.—*Leaves* alternate, petioled, cordate, acute, entire.—*Spikes* paniced, terminal, and from the exterior axills long, ascending.—*Flowers* numerous, distinct.—*Calyx* three-leaved, bractiform.—*Filaments* five, from the nectary; *anthers* two-lobed.—*Styles* three.

In January I found a very large plant of this climbing over a small tree, of about sixteen or eighteen feet high, with few leaves, but innumerable, beautiful, pendulous racemes loaded with small, smooth, bright red berries, each contained when perfect, three small, black, flattened, roundish, kidney-shaped seeds in one distinct cavity of the berry.



Obs. by N. W.

I have found it in Nipal, in low vallies, at Hetounra, Marekoh, &c. growing to a very great size, and thickly decorated with racemes of fruit and flower in the rainy season. I have also had it from the neighbourhood of Saharunpore and from Silhet, where it is called Mutang Saug (মুতাং সাং).—N. W.

2. D. (formerly *Celosia*, R.) *tetragyna*, R.

Shrubby, scandent. *Leaves* ovate-cordate. *Flowers* axillary. *Styles* four-cleft.

A native of the Moluccas, and from thence accidentally introduced into the botanic garden at Calcutta, amongst spice and other plants; flowering time in Bengal, the cold season.

*Stem* ligneous, scandent; *young shoots* pendulous, striated, smooth. —*Leaves* alternate, petioled, ovate-cordate, acuminate, somewhat undulate, smooth on both sides; about two inches long, and one broad.—*Petioles* channelled.—*Flowers* axillary, from solitary to the being collected on small short-peduncled heads; they are small and of a pale-greenish white colour.—*Calyx* (I would in this species rather say bractes,) three-leaved.—*Corol* (rather *calyx*) five-leaved; *leaflets* obtuse, and about as long as the stamens.—*Nectary* with four or five, lengthened, antheriferous divisions.—*Germ* four-lobed. *Styles* four, recurved.—*Berry* with from one to four lobes, smooth, when ripe red, succulent, size of a pea, containing from one to four reniform seeds, though one is by far the most common.

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*Additional genera by N. W.*

*RIBES*, Linn.

*Petals* five, inserted on the five-cleft *calyx*, together with the stamina. *Style* bifid. *Berry* inferior, many-seeded.

1. *R. glaciale*, Wall.

Erect, unarmed, with smooth shining branches. *Leaves* round-cordate, five-lobed, with a few scattered hairs on both sides; as long as their gland-hairy petioles; lobes caudate-acuminate, unequally serrate. *Racemes* solitary, erect, pubescent, glandular. *Bractes* equalling the flowers, ciliate, persistent. *Style* long.

A native of the frigid regions of *Himalaya*, Gosain-Than, in flower and fruit in August. Cap<sup>t</sup>. Webb and Dr. G. van found it at *Kedarnath*, and on the sides of the *Choor* river, at an elevation of not less than ten thousand feet.

An erect, branchy, unarmed shrub. *Branches* alternate, rigid, round, covered with brown, sometimes silvery, shining, perfectly smooth, separating epidermis. The new shoots a little hairy, surrounded at their base by large, ovate, membranous, three-ribbed, ciliate *bud-scales*. *Leaves* at first sub-fascicled, afterwards alternate, round cordate, five-lobed, varying much in size, from one to three inches in breadth when full-grown; three-nerved, the axils of the nerves generally furnished with a few ash-coloured hairs; nerves and veins slightly hairy, at length nearly smooth; *lobes* broad-lanceolate, very finely acuminate, sharply and unequally inciso-serrate, the exterior two shorter than the rest, in the small leaved variety almost obliterated.—*Petiol* slender, about as long as the leaf, pubescent, with some long glandular hairs towards the widening base. *Racemes* axillary, solitary, erect, when fruit-bearing somewhat nodding, equalling the leaves in length, short-peduncled, cylindric, gland-pubescent, many-flowered.—*Flowers* green, rather large, equalling in length the lanceolate, gland-ciliate, persistent *bractes*.—*Pedicels* two lines long, pubescent.—*Lacinia* of the *calyx* lanceolate, obtuse, striate, minutely pubescent.—*Petals* very small, cuneate-ovate, obtuse.—*Stamina* scarcely half the length of the calycine segments.—*Anthers* round, two-celled.—*Ovary* a little pubescent. *Stigma* obtuse, slightly two-lobed.—*Berry* round, smooth, crowned with the

M m m

withered remains of the flower, red, faintly striped, equalling a common red currant in size, of a sour and astringent taste.

*Obs.* This species comes very near to *R. alpinum*, and is intermediate between that and *R. nigrum*. It differs chiefly in the larger size of all its parts especially the leaves and flowers; the finely acuminate leaves and lengthened style. The variety with small leaves is much more like the former. My friend Dr. Govan thinks that there are two species concealed among the shrubs I have described above; one with very small, acute, trilobed or obscurely five-lobed leaves; the other with large five-lobed, very finely, almost caudato-acuminate leaves. In the event of this supposition being confirmed, the last mentioned shrub may be called *R. acuminatum*. I have hitherto in vain attempted introducing the plant into the botanic garden; even in the valley of Nipal the experiments of Mr. Gardner, directed to that object, have failed.—N. W.

## 2. *R. villosum*, Wall.

Unarmed, younger branches, leaves, and racemes villous, glandular and viscous. *Leaves* rounded, obscurely cordate, obtuse, three-lobed, serrate, rather longer than their petiols. *Racemes* erect; *bractes* lanceolar, longer than the pedicels. *Berries* villous.

Found on the mountains to the North of Shreenugur and communicated by my plant-collector Kamroop.

Unarmed. *Branches* flexuose, greyish; while young villous. *Leaves* round, scarcely emarginate at the base, very obtuse, three- or five-lobed, serrate, gland-ciliate, from an inch to an inch and a half in diameter, copiously beset with short, soft, subulate hairs, exuding a resinous substance, which hardens into small shining dots, especially on the under surface of the leaves; five-nerved, veined, longer than their villous and viscous *petiols*. *Stipules*, none, except the widening base of the petiol.—Fruit-bearing *racemes* axillary, solitary, erect, longer than the leaves. *Peduncle* gland-villous, as are also the sub-persistent lanceolar bractes; the latter longer than the pedicels.—*Berry* round, villous, seemingly red, of the size of a red currant, crowned with a short, villous, calycine tube.

*Obs.* This shrub comes exceedingly near *R. resinosum*, Pursh. flor. amer. i. 163; Sims's Bot. Mag. xxxviii. 1583; and may perhaps prove the identical species. I can discover no indication of any thing like the large *stipules*, represented and recorded in the last quotation, the leaves of which appear less rounded and obtuse, than those of my plant.—I have not seen the flowers.—N. W.

### 3. *R. Grossularia*, Linn.

*Branches* prickly. *Footstalks* hairy. *Flowerstalks* single-flowered. *Bractes* distinct. *Fruit* hairy.—Engl. Bot. xviii. 1292.

Found by Capt. Webb at Neeti pass and communicated to me in 1818 in fruit. The prickles are ternate, very long, and shining; on young luxuriant shoots there are also a great number of short, scattered, slender, stiff hairs. *Leaves* deeply trifid, pubescent on the upper surface. I have only seen the unripe fruit, which is hairy and crowned with a very long, slightly hairy, tubular calyx. *Bractes* two, oval, ciliate, inserted a little above the middle of the peduncle.—N. W.

## HEDERA.

*Calyx* five-toothed, deciduous. *Petals* five, oblong, tapering from a broad base. *Berry* globular, four- or five-seeded, crowned with a vestige of the fallen segments of the calyx.

### 1. *H. Helix*, Linn.

*Leaves* some ovate, some lobed.—Engl. Bot. xviii. 1267.—Flor. Dan. vi. 1027.—Thunb. jap. 102.

*Fotogi Tsta*, Simulacri seu idoli Hedera. Kaempf. amoen. v. 887.

This is one of the most common as well as noble productions of Nipal, where it grows to a majestic size and extent over trees and rocks. I have met with it from Bheempedi and Cheesapanee, to the great valley and on all the mountains surrounding it up to the very top

of mount Sheopore. I have had it likewise from Kumaoon and Shreenagur. It blossoms and produces fruit in succession from May to December.

Newar. *Saogouke* or *Gooke* (the climber.)

*Stem* round, a little flattened on one side, very branchy, of various thickness, generally of the size of a man's wrist, though sometimes still larger. I have brought specimens with me for the Museum at the India House, measuring nine inches in circumference. *Bark* scabrous, ash-coloured, wood of a light grey, or yellowish colour, soft and light. The stem and branches produce a vast number of fibrous, long radicles by which they attach themselves and adhere firmly to trunks and branches of trees, and to rocks. Sometimes they are perfectly concealed within and as it were bearded with these radicles. *Young shoots* long and slender, ash-coloured, shining, perfectly smooth, as are also the leaves and petioles.—*Leaves* leathery, dark-green and shining above, pale underneath, from five- to seven-nerved; nerves sub-dichotomous, veins capillary and forming large reticulations; they vary exceedingly in size and form, and are from three to five inches long. On the flower- and fruit-bearing branches they are invariably undivided, lengthening into a cuspidate acumen, more or less tapering and contracted towards the base which is acute, from narrow-, almost linear-lanceolate, to ovate or elliptic, sometimes obovate or trapeziform with a retuse apex, often unequal at the base, with even or repand margins. In all other cases they are three- or five-lobed, sometimes palmate or even sub-digitate, the lobes entire or repand; that in the middle larger and more acuminate than the rest; with a broad, more or less cordate, entire base.—*Petioles* slender, widening at the base, a little thicker immediately under the leaf, which it equals or exceeds in length.—*Umbels* globular, many-flowered, lateral, on the younger branches, or terminal, forming oval, simply branchy, racemose corymbs. *Peduncles* an inch or an inch and a half long, pedicels two-thirds of an inch long; all covered with minute stellate silvery scales.—*Flowers* of a pale green colour,

nearly white, inodorous, covered on the outside with scales. *Teeth* of the calyx almost invisible.—*Petals* ovate, acute, most spreading, at length reflected, equalling the stamina.—*Ovary* turbinate, scaly, four-seeded. *Style* short. *Stigma* truncate.—*Berry* yellow, shining, perfectly round, three- or four-seeded, in other respects precisely as described and represented by Gærtner, in carp. i. 130. t. 26.

*Obs.* I dare not separate this plant from our European Ivy, from which it seems to differ only in its gigantic size and in the number of seeds.—It is not put to any use except for faggots, which fate it shares with so many other grand productions of Nipal.—N. W.

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**PAEDERIA, Schreb. gen. 412.**

*Calyx* five-toothed. *Corol* tubular. *Germ* two-celled, one-seeded, attachment inferior. *Stigma* two-cleft. *Berry* inferior, two-seeded. *Embryo* erect, and furnished with a perisperm.

1. *P. fatida*, Willd. spec. i. 1219.

Shrubby, twining. *Leaves* oblong-cordate. *Panicles* axillary and terminal. *Stamina* inclosed. *Berries* compressed.

Somaraji, *Asiatic Res.* iv. 261.

*Sung.* प्रसारणी, Prusarinee, राजवला, Rajuvula, भद्रपणी, Bhadrupurnee, प्रतानिनी, Prutaninee, सरणी, Suruni, सारणी, Sarunee, भद्रवला, Bhudravula, कटम्भरा, Kutumbhura, सुप्रसारा, Sooprusara, सारिणी, Sarinee, सरणी, Surunee, सरा, Sura, चारुपणी, Charoopurnee, प्रतानिका, Prutanika, प्रवला, Pruvula, राजपणी, Rajupurnee, वला, Vula, सरणा, Suruna, प्रसारिणी, Prusarinee, चन्द्रवल्ली, Chandruvullee, प्रभद्रा, Prubhudra.

*Beng.* Gundha badhulee.

*Hind.* Gundali.

*Convolvulus foetidus*, Rumph. amb. v. 436. t. 160.

*Apocynum foetidum*, Burm. ind. p. 71.

Is rather a rare plant, I have only found it in the vicinity of Calcutta, twining up and over trees, &c. Flowering time the beginning of the cold season. Its root is used by the Hindoos as an emetic.

*Stem* ligneous, twining; *young parts* round, smooth. *Leaves* opposite, long-petioled, oblong-cordate, pretty smooth, entire. *Stipules* broad-cordate.—*Panicles* axillary and terminal, brachiate.—*Flowers* numerous, of a deep pink colour.—*Bractes* ovate.—*Calyx* five-toothed.—*Corol. Tube* pretty long, somewhat gibbous, inside woolly. *Border* narrow, divided into five cordate, crenulate segments.—*Filaments* short, inserted irregularly about the middle of the tube. *Anthers* erect, within the tube.—*Germ* inferior, turbinate, two-celled; *cells* containing one ovulum each, attached to the bottom of the cell. *Style* single. *Stigma* two-cleft; *segments* various, bent amongst the anthers.—*Berry* dry, compressed, smooth, with five lines on each side; one-celled, two-seeded.—*Seeds* compressed, smooth, enlarged with a somewhat membranaceous ring all round.—*Perisperm* conform to the seed, but scanty.—*Embryo* large, erect. *Cotyledons* round, cordate. *Radicle* short, inferior.

*Obs. by N. W.*

This is a very common shrub in Nipal, blossoming during the rainy season, and ripening its fruit in December. It is also found at Silhet.\*—Mr. Porter has communicated wild specimens from Ponnang.—The leaves vary much in figure and size.—N. W.

## 2. *P. recurva*, R.

Shrubby. *Leaves* lanceolar, acuminate. *Corymbs* terminal, recurved.

A slender shrubby species; a native of Chittagong, where it is chiefly found in moist situations amongst the hills, flowering in the hot season. The seeds ripen in October and November.

\* It is found in the North of Bengal. Ed.

*Stem* and *branches* erect; *young shoots* round, and smooth.—*Leaves* opposite, short-petioled, lanceolar, entire, acuminate, pretty smooth on both sides, about six inches long, and from two to three broad.—*Stipules* as in the other rubiaceæ, with a subulate, hairy point.—*Corymbs* terminal, recurved, brachiate, villous.—*Bractes* opposite, ensiform.—*Calyx* five-cleft, hairy; *segments* conic, permanent. *Corol* funnel-shaped. *Tube* the length of the border, widening to the mouth, a little hairy on the outside. *Border* of five, contorted, obliquely oblong segments.—*Filaments* scarcely any. *Anthers* five, linear, erect, attached below the middle to the mouth of the tube of the corol, and their lower ends in it.—*Germ* hairy, two-celled with one *ovulum* in each, attached to the partition a little above its middle. *Style* the length of the tube of the corol. *Stigma* simple, linear-clavate, longer than the stamina.—*Berry* inferior, size and colour of a black currant, when dry striated, crowned with the remaining calyx, two-celled.—*Seeds* solitary, the outside convex; on the inside a deep pit filled with the spongy receptacle. *Integument* single, thin.—*Perisperm* conform to the seed, hard, dull white.—*Embryo* lodged in the middle of the convexity of the seed. *Cotyledons*, reniform. *Radicle* inferior.

*S. P. erecta, R.*

Shrubby, erect. *Leaves* sub-sessile, broad-lanceolar, entire. *Panicles* in the terminal forks of the *branchlets*, erect. *Stamina* protruded.

An erect, shrubby plant; a native of the Sîlhet district. It flowers in May and June; and the seeds ripen about the end of the rainy and beginning of the cold season.

*Stems* short, erect. *Bark* smooth, ash-coloured. *Branches* round, smooth, and dichotomous.—*Leaves* opposite, sub-sessile, broad-lanceolar, entire, smooth, ribbed with parallel veins underneath; from three to four inches long, by one and a half broad.—*Stipules* interfoliaceous, as in other rubiaceæ.—*Panicles* solitary in the fork of the branchlets, often longer than the leaves; thin, being composed of a few small, short, opposite ramifications.—*Flowers*



small, numerous, white, inodorous.—*Calyx* superior, short, slightly five-toothed.—*Corol* with a short tube which is woolly on the inside; segments of the border oblong.—*Filaments* short, inserted on the tube of the corol. *Anthers* oval, scarcely exsert.—*Germ* turbinate, two-celled, with one *ovulum* in each, attached to the inner, and lower angle of its cell. *Style* the length of the tube of the corol. *Stigma* two-lobed.—*Berry* inferior, the size of a pea, when ripe smooth, shining, highly polished, black, two-celled; one of the cells frequently abortive.—*Seeds* solitary, with a very deep concavity on the inner or flat side. *Integument* single.—*Perisperm* conform to the seed, rather hard.—*Embryo* lodged in the middle of the perisperm. *Cotyledons* round, reniform. *Radicle* inferior.

#### 4. *P. ternata*, Wall.

Trichotomous, erect; smooth, with triangular branchlets. *Leaves* ternate, oblong-lanceolate. *Corymbs* axillary, trichotomous, erect, shorter than the leaves. *Calyx* campanulate, obscurely five-toothed.

Found in flower in April, on the Juyuntiyapoor mountains, bordering on Silet; communicated by Mr. De Silva.

Native name Teomeri (तेमेरि); Achelia Pata (अचेलिया पाता),

A small tree. *Branches* trichotomous, round, covered with ash-coloured bark. *Branchlets* triangular, glaucous, smooth as well as all the other parts.—*Leaves* coriaceous, spreading, ternate, sometimes opposite, oblong-lanceolate, finely acuminate, entire, acute at the base, shining above, with elevated rib and nerves underneath, the latter oblique, communicating near the margin, especially towards the apex of the leaf, by means of arched anastomoses, veins sub-transversal; length five or six inches.—*Petiol* very short, sessile.—*Stipules* erect, lanceolate, acuminate, somewhat keeled, deciduous, equalling the petiols in length.—*Corymbs* axillary, five-flowered, once or twice trichotomous, about four times shorter than the leaves, supported by slender, triangular, sparingly pubescent *peduncles*, with lanceolate, ternate bractes under each sub-division.—*Flowers* ternate, rather large, infundibuliform, white, supported by a long, filiform pedi-

cel, having a pair of opposite, linear, ciliate bractlets above its middle; they are said to be fragrant while quite fresh, but they emit a very offensive smell on being steeped in water after they have been dried. *Æstivation* valvate.—*Calyx* sub-companulate, wider than the tube of the corolla, with five, small, remote teeth.—*Corolla* fleshy, half an inch long, with a five- rarely four-cleft spreading border; lobes lanceolate, acute. Throat open, together with the inside of the tube and the base of the laciniaë bearded with short, fleshy hairs, which conceal the linear sub-sessile, enclosed anthers.—*Ovary* underneath, small, two-celled, two-seeded; *ovula* erect, *Stigma* linear, two-lobed.

*Obs.* I have not seen the fruit, and am therefore unable to decide with any certainty on its true genus. It may perhaps belong with the two last described species to a new genus, approaching to Aublet's *Ronabea*.—N. W.

### GUETTARDA, Schreb. gen. N. 1437.

*Calyx* sub-entire. *Corol* infundibuliform, with the border from five- to eight-parted. *Stamina* from five to eight. *Drupe* dry; nut from five- to eight-celled. *Seed* solitary.

1. *G. speciosa*, Willd. spec. iv. 398.

A boreous, unarmed. *Leaves* obovate. *Cymes* axillary, dichotomous. *Flowers* sessile, from seven, to eight-cleft. *Drupe*s with as many seeds as divisions in the border of the corol.

*Jasminum hirsutum*, Willd. i. p. 35.

*Carramba jasminiflora*, v. *Fleur. de St. Thome. Sonnerat. t. 2. p. 228. t. 128.*

*Ravapu*, *Rheed. mal. iv. 99. t. 47 and 48.*

On the coast of Coromandel, it is only to be found in gardens, where it is raised from the seed. It is in flower all the year round,

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and highly ornamental as well as fragrant. I am not aware that it is used for any economical purposes.\*

*Trunk* erect, straight, covered with smoothish, dark-coloured bark.—*Branches* numerous, opposite, decussated, spreading, horizontal, forming a large, beautiful, shady, evergreen head.—*Leaves* opposite, petioled, nearly decussate, obovate, sometimes cordate at the base; entire, smooth, from six to nine inches long, and from four to six broad.—*Petiols* round, coloured, about an inch and a half long.—*Stipules* large, within the leaves, oblong, spreading.—*Cymes* opposite, axillary, long-peduncled, twice two-forked.—*Peduncles* round, a little inflected, from three to four inches long.—*Bractes* many, linear, obtuse, caducous.—*Flowers* sessile, from fifteen to twenty on the cyme, large, white, and exquisitely fragrant, partaking much of the fragrance of cloves.—*Calyx* cup-shaped, entire, permanent.—*Corol.* *Tube* cylindric, an inch and a half long. *Throat* woolly. *Border* from six- to nine-cleft.—*Filaments* none. *Anthers* as many as there are divisions in the border of the corol, linear, within the mouth of the tube.—*Germ* inferior. *Style* a little shorter than the tube. *Stigma* nearly globose.—*Pericarp* a dry drupe, nearly globose, pretty smooth, inwardly of a fibrous, woody texture, containing as many curved cells as there were anthers, or divisions in the border of the corol.—*Seeds* one in each cell, much curved, concave, part of the curvature outward.

*Obs.* I have at various times examined many hundreds of the flowers of this tree, and never found any that were hermaphrodite. It agrees better in habit and in most other respects, the seed vessels excepted, with *Gardenia* than with any other genus I have met with.

### CARISSA, Schreb. gen. N. 413.

*Calyx* five-toothed. *Corol* funnel-shaped. *Germ* superior, two-celled, cells two- to four-seeded; attachment interior. *Berry* two-

\* I have received abundance of specimens from Pinang, which I suppose were taken from spontaneous trees. Time of flowering the latter months of the year.—N. W.

celled, few-seeded. *Embryo* inverse, and furnished with a perisperm.

1. *C. Carandas*, Willd. spec. i. 1219.—Roxb. Corom. 77.

Sub-arboreous. *Thorns* often two-forked. *Leaves* elliptic, obtuse, smooth. *Corymbs* terminal, few-flowered. *Germ* eight-seeded.

Avinga, Krishna-pakphula, and Sanscrit names. See Asiatic Res. iv. 263.

Sung. करमई, Kurumurda, सुषेणः, Sooshena, दृष्यापाकफलः, Krishnapakphula, करान्धः, Kuramla, करमईकः, Kurumurdaka, अविमः, Uvigna, पाणिमई, Panimurda.

Telinga. Waaka.

Tam. Kalaaha. It is also thus called by Europeans on the Coromandel coast.

Beng. Kurumcha

A common, large shrub; or irregularly formed small tree, growing in most wild, woody, dry, uncultivated parts. Flowering time February, March, and April. Fruit ripe in July and August.

*Trunk*, when it is of age to have one, irregularly bent in various directions. *Bark* grey. *Branches* and *branchlets* very numerous, always two-forked, and standing nearly at right angles, rigid, smooth, and round.—*Thorns* constantly in pairs at the divisions of the branches and branchlets, and at every other pair of leaves, opposite, horizontal, very strong, smooth, and exceedingly sharp, they are frequently forked.—*Leaves* opposite, nearly sessile, oval, obtuse, smooth, hard, shining; their insertions remarkably regular, generally one pair below the fork, crossed with the thorns; and another pair between the forks, where there are no spines.—*Peduncles* terminal, generally in pairs, each less than an inch long, bearing from three to many, beautiful, milk-white, Jasmine-like flowers.—*Bractes*, a small one at the insertion of each pedicel.—*Calyx*, corol and stamens, as in the genus.—*Germ* ovate, two-celled, with four ovula in each,

attached to the thickened partition.—*Berry* single, (never two, not even the rudiment of more than one,) size of a small plumb, but of a more lengthened form, when ripe of a shining black, two-celled.—*Seeds* four in each cell when all come to maturity, which is uncommon; *oblong*, compressed, concave on the inside, from the centre of the concavity is the attachment to the large fleshy part of the margin, thin. *Integument* single.—*Perisperm* conform to the seed, white.—*Embryo* inverse. *Cotyledons* nearly round. *Racicle* cylindrical, superior.

*Obs.* This Plant makes exceedingly strong fences. The number of their strong, sharp thorns, renders them almost impassible.

The fruit just before ripe, is employed, to make tarts, and preserves of various kinds, also to pickle, and by most people reckoned superior for these uses, to every other fruit in the country not even the *mango* excepted.

They are universally eaten by the natives when ripe, and are tolerably pleasant to the taste, even of an European.

## 2. *C. diffusa*, R.

Shrubby, diffuse, armed branches dichotomous. *Leaves* subsessile, roundish-ovate-cordate, mucronate, polished. *Flowers* terminal. *Germs* four-seeded. *Berries* ovate.

*Sung.* करमदिका, Kurumurdika.

*Telinga.* Waakoyloo.

*Oorissa.* San Kurunda.

Is a native of the Ganjam district, and from thence northward to the mouth of the Hoogly. Flowering time the hot season.

*Stem* scarcely any can be traced, but numerous, spreading, dichotomous branches, forming a low, broad, rigid, thorny bush.—*Spines* opposite, &c. as in *C. Caranda* at the larger pairs of the leaves only, horizontal, simple, bifid, or twice-bifid.—*Leaves* opposite, subsessile, the alternate pairs always larger, and ovate-cordate, roundish, and without spines; all are entire, of a firm polished, shining texture, each ending in a short, subulate, somewhat recurved point.—*Co-*

*rymbs* terminal, rarely axillary, many-flowered. *Flowers* pure white. — *Calyx* five-toothed, small. — *Corol* funnel-shaped; the upper half of the tube a little swelled. *Border* of five, obliquely-lanceolate divisions. — *Filaments* five, inserted rather below the middle of the tube of the corol; anthers oblong. — *Germ* ovate, two-celled, with two ovula in each, attached to the middle of the partition. *Style* half the length of the tube of the corol. *Stigma* double, the lower half nearly round, the upper half more slender, and tapering. — *Berries* oval, pulpy, when ripe smooth, shining black, size of a French bean, two-celled, with two seeds in each. — *Seeds*, *Perisperm* and *Embryo* as in *C. Carandas*.

### 3. *C. villosa*, R.\*

Shrubby, tender parts villous. *Leaves* from broad-lanceolate to oblong-acute. *Flowers* terminal, subtern, or seven. *Germ* four-seeded, (two in each cell.)

Several plants of this shrub have been long cultivated in the botanic garden at Calcutta, but from whence, or how they got into the garden, has never been ascertained. *Flowering* time the same as the other species, viz. during the warmest time of the year, March, April, and May. This species seems perfectly distinct, and has much less to recommend it than either *Carandas*, or *diffusa*. — In most respects it agrees pretty well with Vahl's description of *C. edulis*. The following description will, however, point out some difference.

*Stem* rather weak, and leaning considerably, soon dividing into several, rather slender, dichotomous, flexuose branches. *Bark* of the ligneous parts spongy, and deeply cracked; that of the *young shoots* villous. — *Thorns* opposite, at the forks of the branches, and in all other parts at every second, straight, strong, very sharp, and less frequently compound than in the other two species just mentioned. — *Leaves* opposite, short-petioled, oblong, and broad-lanceolar, acuminate, soft with down, particularly while young, from one to two inches long, and rarely more than one broad. — *Stipules*

\* *C. hirsuta*, Heyne. — Roth. nov. spec. 123. — Syst. Veg. iv. 522. — N. W.

small, and only present where the spines are.—*Flowers* terminal, tern, or twice tern, small, white.—*Calyx*; segments lanceolate, acute, villous.—*Tube* of the corol a little curved, swelled near the mouth. *Border* of five, linear-lanceolate, acute segments.—*Stamina* lodged in the swelling of the tube.—*Germ* conic, two-celled, with two *ovula* in each, attached to the partition. *Style* shorter than the tube. *Stigma* large, with a villous, bidentate apex.—*Berry* round, the size of a pea, smooth, deep black-purple, two-celled. *Pulp* succulent, purplish, and sweet.—*Seeds* one or two in each cell, shape various, concave on the inside, convex on the exterior. *Integument* single, light brown, and rather rough.—*Perisperm* conform, to the seed, white, amygdaline.—*Embryo* inverse, white. *Cotyledons* roundish. *Radicle* cylindric, length of the cotyledons, superior.

#### 4. *C. axillaris*, R.

Shrubby, armed with simple, opposite, recurved spines. *Leaves* short-petioled, oblong. *Corymbs* peduncled, axillary, many-flowered. A native of the Malaccas.

### CERBERA, Schreb. gen. N. 415.

*Calyx* five-parted. *Corol* funnel-shaped. *Germ* two-lobed; lobes two-celled; cells two-seeded; attachment interior. *Drupe*s superior, one or two singly, one-seeded. *Embryo* inverse, without perisperm.

#### 1. *C. fruticosa*, R.\*

Shrubby, dichotomous. *Leaves* broad-lanceolar. *Corymbs* terminal. *Drupe*s obliquely urn-shaped, and gaping.

From Pegu this elegant shrub has been introduced into the botanic garden at Calcutta, where it is in constant blossom. The flower like those of *Vinca rosea*, but larger, and faintly fragrant; it is in fact one of the most ornamental shrubs in the garden.

\* Edw. Bot. Reg. v. 391.—N. W.

*Stem* short, soon dividing, and sub-dividing into many, straight, round, smooth, dichotomous *branches* and *branchlets*.—*Leaves* opposite, often remote, short-petioled, from oblong to lanceolate, entire, smooth, acuminate, about five or six inches long, and from two to three broad.—*Stipules* interfoliate, acute.—*Corymbs* terminal when they first appear; but long before the whole of the blossoms expand, a branchlet shoots forth on each side and places them in the fork; divisions sub-trichotomous and short.—*Flowers* large, mouth of the tube lively red, the rest a bright lively pink, somewhat fragrant, and highly ornamental.—*Bractes* opposite, triangular, acute.—*Calyx* five-leaved, leaflets oblong, smooth, permanent, a smooth gland on the apex of each.—*Corol* infundibuliform. *Tube* nearly two inches long, and equally slender, except near the apex, where it swells considerably, mouth highly coloured and hairy. *Border* of five, obovate-oblong, equal segments.—*Filaments* five, short, inserted round the bottom of the swelled top of the tube. *Anthers* sagittate, entirely hid within the mouth of the tube.—*Germ* two, villous, on the sides where they meet, a small subulate scale covering the fissure on each side, singly two-celled, with one ovulum in each, attached to the middle of the partition. *Style* nearly as long as the tube. *Stigma* large, with a two-lobed apex, which is lodged in the dome formed by the converging of the sagittate anthers.—*Drupe* (in this rather capsule) generally solitary, obliquely urn-shaped, size of the first joint of the little finger, villous and veined, dark greenish purple, apex truncate, sloping much to the inner side, with a slit down the middle, semi-two-valved, opening up the inside and along the apex, one-celled. *Pulp* scarcely any, the whole substance being thin and somewhat fibrous.—*Seeds* solitary, ovate-oblong. *Integument* single, white, pretty thick, and soft.—*Perisperm* none.—*Embryo* erect. *Cotyledons* conform to the seed, of a pale yellowish colour. *Radicle* ovate, superior.

2. C. Odollam, Gaert. carp. ii. 193. t. 124.

*Leaves* alternate, lanceolate, with transverse nerves, smooth. *Corymbs* terminal, divisions of the calyx linear, and revolute.



Odallam, *Rheed. mal.* i. 71. t. 39. But *Manghas lactescens*, *Burm. Zeyl.* 150. t. 70. f. 1. is without doubt a different species, which Gaertner has considered to be *C. Manghas*, *Linn.*

A pretty large tree, a native of salt swamps near the shores of various parts of India, yet it thrives well in the sweet and comparatively rich soil of the botanic garden at Calcutta, where the trees are fully as large as the largest pear trees, and in flower and seed the whole year.

The wood is remarkably soft, spongy and white, the bark on the young, generally trichotomous shoots polished, deep green. *Leaves* alternate, and crowded about the ends of the branchlets, short-petioled, lanceolar, firm and polished. *Corymbs* terminal. *Flowers* large, white and fragrant. *Bractes* and *calycine segments* linear and revolute. *Corol* infundibuliform; *segments* of the border subtriangularly falcate, in the bud imbricated. *Stamina* enclosed. *Germ* two-lobed, each lobe with a groove on the outside and containing two cells, with two ovula in each, attached to the parition. I never saw more than one of the lobes come to maturity, and that with rarely more than one seed, the other cell, proving abortive. The style is slender, and the stigma in this species is remarkably large, conical, resting in a saucer-shaped receptacle, the circumference fluted with ten grooves, and the apex two-cleft. *Gartner's description and figures of the mature seed vessel and seed, are so good as to render any thing further unnecessary.*

3. *C. maculata*, *Willd. spec.* ii. 1223.

*Leaves* sub-verticilled, oblong, tapering most toward the base, smooth, veined. *Drapes* acuminate.

*Ochrosia*, *Jussieu. gen. plant.* 161.

Found by Colonel Hardwick indigenous on the Island of Mauritius, in seed in September. From his specimens the above definition is taken.

*Additional species by N. W.*

4. *C. Manghas*, Linn.—Gærtn. *carp.* ii. 192. *t.* 123 et 124.

*Leaves* closely approximate, scattered, oblong, acute, attenuate downwards. *Lacinia* of the *corolla* ovate, with an incurved, sub-retuse apex. *Drupes* two, ovate-oblong.

*Arbor Lactaria*, Rumph. *Amb.* ii. 243. *t.* 81.

I found this species growing wild on the sandy shores of Singapore and some of the adjacent Islands in flower in September and October.

I have not seen the fruit; yet I am almost certain of the identity of the tree, with Rumphius's *arbor lactaria*.—Loureiro's *C. salutaris*, flor. cochinch. i. 136 may perhaps be this plant, notwithstanding his quoting Rumphius's *Lactaria salubris*, l. cit. 255. *t.* 84. (which Lamarck has with propriety separated under his *C. oppositifolia*, *Encycl. bot.* i. 62. *Suppl.* i. 262.) in preference to the tree mentioned above.—Roxburgh's *C. quaternifolia*, hort. beng. 19, is the same as my plant, although he also adduces the *Lactaria salubris*.

The trees which I observed were small; branchlets, remarkably thick, sub-cylindric, marked with the vestiges of the insertion of the fallen leaves, otherwise perfectly smooth, as are all the other parts. *Leaves* scattered and spreading in all directions, closely approximated towards the ends of the branches, oblong, with an acute somewhat recurved apex, tapering towards the base, coriaceous, dark-green and glossy above, paler underneath, with capillary sub-transversal nerves which unite by means of a sub-marginal vein; from six to nine inches long; on young shoots somewhat remote, alternate or sub-verticillate.—*Petiol* an inch long, round, slightly furrowed; within the base there are numerous broadish, persistent, black glands, which are arranged in two or three series.—*Panicle* large, terminal, open, with articulated di- or tri-chotomous ramifications.—*Flowers* white, showy, almost scentless, ternate, at length sub-racemose, on clavate peduncles.—*Leaves* of the calyx large, membranous, whitish, lanceolate, un-

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equal.—*Tube* clavate, about an inch long, widening towards the mouth which is shut by means of five villous pink-coloured scales. *Lacinia* broad-ovate, most spreading, sub-retuse, in consequence of the blunt apex being slightly incurved.—*Stigma* capitate, sub-bilobate.—N. W.

### OPHIOXYLON, Schreb. gen. N. 1578.

*Calyx* five-toothed. *Corol* funnel-shaped. *Germ* two-celled, cells one-seeded, attachment inferior. *Berries* twin, superior, slightly united, each one-seeded. *Embryo* inverse, and furnished with a perisperm.

1. *O. serpentinum*, Willd. iv. 979.

T-iiovanna-Amel-Podi, *Rheed. mal.* vi. 81. t. 47.

Radix Mustela, *Rumph. Amb.* vii. 29. t. 16.

*Sung* चन्द्रिका, Chundrika, चर्महन्त्री, Churmuhuntree, पसुमेहन कारिका, Pushoomehunukarika, नन्दनी, Nundunee, कारवी, Karuvee, भद्रा, Bhudra, वासुपुष्पः, Vasoopooshpa, वासरा, Vasura, चन्द्रशूरा, Chundrushoora.

*Beng.* Chandra.

*Hind.* Ch'hota chand.

*Telinga.* Patalgauni.

This, in a rich soil, is a large climbing or twining shrub; in a poor soil, small and erect. It is a native of the Circar mountains.\* † In my garden it flowers all the year round.

*Stem* woody, erect, climbing, or twining. *Bark* ash-coloured.—*Leaves* three-, four-, or five-fold, short-petioled, oblong, pointed, wavy, entire, smooth; from four to five inches long, and about two broad.—*Stipules* none.—*Fascicles* axillary, peduncled, many-flowered.—

\* It is indigenous in every part of Bengal.—*Ed.*

† It grows wild at Noakote in Nipal, blossoming in May.—N. W.

*Peduncles* long, smooth, round, sometimes nearly erect, sometimes drooping. *Pedicels* and *calyces* of a bright red colour, which with the white flowers, gives the fascicles a very pretty appearance.

The HERMAPHRODITE FLOWERS, indeed I never could discover any other, are well described in the *Genera plantarum*, except that the coral is always contracted.—*Germ* superior, two-lobed, with one ovulum in each, attached to the inner and lower corner of the cell.—*Berry* two-lobed, smooth, shining black, and succulent when ripe; lobes the size of a pea, each one-celled.—*Seed* solitary, somewhat trapeziform. *Integuments* two, the exterior one nuciform, most pointed at the base, hard, thick, and rugose, the inner one a fine membrane, adhering to the perisperm.—*Perisperm* conform to the seed, greenish white.—*Embryo* inverse, straight, nearly as long as the perisperm. *Cotyledons* round, cordate. *Radicule* sub-cylindric.

*Obs.* The want of the nuciform, bony, exterior integument of the seed in Gaertner's *O. trifoliatum*, ii. 129. induces me to think his cannot be the same, yet I know of no other to compare his with.

The root of this plant is employed for the cure of various disorders by the Telinga physicians. *First* in substance, inwardly, as a febrifuge. *Secondly*, in the same manner, after the bite of poisonous animals. The juice is also expressed, and dropt into the eye, for the same purpose. And *thirdly* it is administered, in substance, to promote delivery in tedious cases.

### HUNTERIA, R.

*Calyx* five-parted. *Corol* infundibuliform. *Germ* two-lobed; lobes one-celled, two-seeded, attachment of the *ovula* sub-inferior. *Berries* two, pedicelled, one-celled, one- or two-seeded.

#### 1. *H. corymbosa*, R.

A tree, native of Prince of Wales's Island, where it blossoms in

July; in Bengal, in May, but in the latter place it has not ripened its seed.

*Leaves* opposite, short-petioled, oblong and lanceolate, obtuse-pointed, entire, smooth on both sides, from three to four inches long, and one or two broad.—*Stipules* none, but a swelling on the inside of the base of the petiole.—*Corymb* terminal, decussate.—*Flowers* numerous, small, white.—*Calyx* one-leaved, five-parted, permanent, segments ovate.—*Corol* one-petioled, funnel-shaped. *Tube* two or three times longer than the calyx, gibbous at the base, and swelled a little at the mouth.—*Border* contorted, five-parted, divisions obliquely ovate-oblong, in the bud spirally imbricated.—*Nectary* a fleshy ring round the base of the germ.—*Filaments* five, very short. *Anthers* ovate, lodged in the swelled part of the tube, just within its mouth.—*Germ* superior, ovate, two-lobed, two-celled, with two ovula in each, attached with their base to the bottom of the partition. *Style* nearly the length of the tube of the corol. *Stigma* ovate, short, with a two-lobed apex.—*Berries* two, perfectly distinct, singly somewhat of a roundish ovate shape, short-pedicelled, size of a cherry, pulpy, when ripe orange-coloured, one-celled.—*Seeds* two in each berry.

*Obs.* The whole of the generic character of this plant, agrees so well with that of *Carissa*, as it stands in the various editions of the *Genera Plantarum*, that I have seen (Jussieu's excepted) as to leave no doubt with those, who still may think two berries are the produce of one flower in that genus, that this ought to be considered a species thereof. But in all the Indian species of *Carissa*,\* that I have yet met with, the pericarpium is uniformly single. As therefore this plant cannot be placed in the same family, I think it better to continue the former generic name (*Carissa*,) to the well known thorny plants described under that genus, for I have not yet met with any of the unarmed species, consequently cannot say what their pericarps may be. I consider this to be a well defined, perfectly distinct genus, and have named it after Dr. William Hunter of the

\* To which, with the celebrated Jussieu I would join *Arduina*.

Bengal Medical Establishment, an eminent botanist, and author of various papers in the *Asiatic Researches*, of the history of Pegu, &c. He was the first discoverer of this very plant.

*WEBERA*, Schreb. gen. N. 1733.\*

*Calyx* five-parted. *Corol* funnel-shaped. *Germ* inferior, two-celled; cells few-, or many-seeded; attachment interior. *Berry* bilocular, cells few-, or many-seeded. *Embryo* centripetal, and furnished with a perisperm.

1. *W. corymbosa*, Willd spec. i. 1224. Gart. carp. 3. 71. t. 102.†  
Shrubby. *Leaves* from lanceolar to oblong, glossy. *Corymbs* terminal. *Calyx* five-parted, and nearly as long as the tube of the corol. *Capsules* few-seeded.

*Rondeletia asiatica*, Linn. suppl. 244.

Cupi, Rheed. Mal. ii. 37. t. 23.

Sung. त्रुभोत्पलः, Droomotpula, कर्णिकारः, Kurnikara, परिबाधः, Parivyadha, पादपोत्पलः, Padupotpula, राजतुरः, Rajuturoo, प्रग्रहः, Pragraha, कृतमालः, Kritumala, सुफलः, Soophula, बाधिरिपुः, Vyadhiripoo, पंक्तिबीजकः, Panktiveejuka.

Beng. Kunkra.

A pretty large, erect, unarmed, ramous shrub, common on most parts of the Coromandel coast.‡

*Leaves* opposite, petioled, broad-lanceolar, margins reflexed, smooth, deep shining green, with hairy glands in the axils of the large veins; six or seven inches long, and about two and half broad.—*Stipules* interfoliaceous, as in the other species—*Corymbs* terminal,

\* This name has been previously commemorated by a genus of Mosses, of which the species have since been distributed among Bryum and Bartramia; the above one is therefore continued.—See Sir J. E. Smith in Rees's Cycloped. in loco.—N. W.

† Canthium, Persoon.—Cupia, Syst. Veg. v. 206.—N. W.

‡ I have received specimens in flower from the hills at Pinang, gathered in December 1822, by Mr. Porter, which differ in no respect from this species.—N. W.

large, divided by three.—*Flowers* small, very numerous, white, faintly fragrant.—*Calyx*, *corol*, and *stamens* as in the genus.—*Germ* turbinate, two-celled, with from six to nine *ovula* in each, attached to the thickened centre of the partition.—*Berry* the size of a large pea, when ripe smooth, shining black two celled.—*Seeds* from four to eight in each cell. *Embryo* furnished with a perisperm, and centripetal radicle.

The extremities of the young shoots are often found covered with a white resinous matter. A substance of the same nature and appearance is to be found on the germs of most of the species of *Gardenia* known to me.

## 2. *W. macrophylla*, R.

Shrubby. *Leaves* broad-lanceolar. *Panicle* terminal. *Corols* with a long slender tube. *Berries* many-seeded.

A shrubby species, found by Mr. W. Roxburgh, indigenous on Prince of Wales Island.

*Young shoots* somewhat villous.—*Leaves* opposite, short-petioled, broad-lanceolar, entire, acuminate; from six to eighteen inches long, and from four to five broad.—*Stipules* angular, &c. as in the *Rubiacea* of Jussieu.—*Panicles* terminal, very large, brachiate, villous.—*Bractes* subulate, villous.—*Flowers* large, white.—*Calyx* divided into five, short, acute, villous segments.—*Corol*; tube cylindric, long, slender and villous; *segments* of the border five, obliquely linear-lanceolate, shorter than the tube.—*Filaments* short, rising above the mouth of the tube. *Anthers* filiform, nearly as long as the segments of the corol. *Germ* oval, two-celled, with many *ovula* in each, attached to an elevated receptacle on the centre of the partition. *Style* longer than the tube of the corol, villous. *Stigma* cavate.—*Berry* the size of a pea, two-celled.—*Seeds* many in each cell, from six to twelve, angular, &c. as in *W. corymbosa*, Gart. carp. 3. t. 192.

## 3. *W. scandens*, R.

Shrubby, scandent, glossy. *Leaves* oblong, cymes axillary. *Stigma* of two oval plates.

Gujer-kota, the vernacular name in Silhet, where it is indigenous. It flowers in April.

*Stem and branches* ligneous, scandent; *young shoots* polished, as is every tender part of the plant.—*Leaves* opposite, short-petioled, long, entire, acuminate, glossy, about six inches long, and from two to three broad.—*Stipules* as in the rest of the rubiaceae.—*Cymes* axillary, and in the forks of the branchlets, solitary, divisions generally biternate.—*Flowers* large, infundibuliform, fragrant, when they first open white, but like the Gardenias become yellow by the second day.—*Calyx* sub-companulate, five-toothed.—*Corol* with a long, slender tube; segments of the border five, obliquely oblong. *Anthers* linear, sessile on the mouth of the tube.—*Germ* inferior, oval, two-celled, with many ovula in each, attached to an elevated receptacle on the centre of the partition. *Style* the length of the tube of the corol. *Stigma* of two, thin, oval lamina.

#### 4. *W. oppositifolia*, R.

Shrubby. *Leaves* lanceolar-oblong, firm and glossy. *Panicles* opposite to a leaf, composed of a few rigid, jointed, sub-recurved spikes. *Corols* with a short, woolly-mouthed tube. *Stigma* clavate, entire.

Native of Chittagong, where it blossoms in April.

#### 5. *W. odorata*, R.

Shrubby. *Leaves* lanceolar, polished, acuminate. *Corymbs* terminal. *Calyx* five-toothed.

Patugroja, the vernacular name in Silhet, where it is indigenous, and grows to the size of a large shrub, or small tree. Flowering time the hot season, when the air is perfumed with the fragrance of its blossoms.

*Leaves* opposite, short-petioled, lanceolar, acuminate, entire, polished, from four to eight inches long, by from one to two broad.—*Stipules* triangular, &c. as in the order.—*Corymbs* terminal,



trichotomous; ramifications villous.—*Flowers* numerous, middle-sized, white, and very fragrant.—*Bractes* opposite, sub-lanceolate, villous.—*Calyx* poculiform, mouth five-toothed.—*Corol* with the tube twice the length of the calyx; *border* of five, spreading, linear-falcate segments, which are longer than the tube.—*Filaments* five, very short. *Anthers* subulate, nearly as long as the segments of the border of the corol, over which they spread.—*Germ* inferior, short, turbinate, two-celled, with three or four *ovula* in each, attached to the thickened middle of the partition. *Style* and *stigma* together longer than the corol, of a clavate-subulate shape.

*Obs. by N. W.*

In the Hon. Company's Botanic Garden this charming shrub flowered for the first time in the month of May 1815, and has since continued blossoming annually.—N. W.

*Additional species by N. W.*

*G. W. densiflora, Wall.*

Sub-arborescent. *Leaves* oblong-lanceolate, with an acute base. *Panicles* rounded, lateral, sub-sessile, occupying the place of a leaf or a branch, trichotomous, dense-flowered. Mouth of the corolla bearded. *Ovary* many-seeded. *Stigma* entire.

Found on the hills of Pulo Pinang by Mr. Porter, in flower during the latter months of the year.

An erect, smooth, large and branchy shrub, or small tree. *Bark* ash-coloured.—*Branchlets* obscurely quadrangular, alternately compressed.—*Leaves* opposite, spreading, coriaceous, oblong-lanceolate, tapering, acuminate, with most entire margins and acute base, shining above, obliquely ribbed, the ribs uniting in large sub-marginal arches, from five to six inches long, exceeding their interstices twice or thrice, on short, channelled *petiols*.—*Stipules* opposite, ovate, acute, adpressed, deciduous, leaving an annular vestige.—

*Panicles* lateral, opposite to a leaf or a branch, alternate, sub-sessile, round-ovate, two-thirds shorter than the leaves, much sub-divided, di- or tri-chotomous, with numerous white, ternate, pedicelled *flowers*.—*Peduncles* pubescent, divaricate, compressed. *Bractes* lanceolate, acute, ciliate, opposite or ternate under the sub-divisions.—*Calyx* nearly tubular, its mouth a little widening, five-toothed, ciliate.—*Corolla* infundibuliform, with some silky adpressed hairs on the outside; *tube* about four lines long, widening; *limb* five-cleft, with linear, long, spreading segments; mouth and upper part of the inside of the tube bearded with long, white hairs, which conceal the capillary filaments. *Anthers* very long, spreading.—*Ovary* obovate, smooth, prominent within the bottom of the calyx, two-celled; ovula numerous, imbricate on a parietal placenta. *Style* smooth. *Stigma* long, clavate, entire, elevated above the mouth of the tube.

*Obs.* This species comes very near to *W. macrophylla*; but its panicles are not terminal, nor have they the long peduncles of the latter.—The structure of its ovary, as also of that of the following species much resembles that of a *Rondeletia*.—N. W.

#### 7. *W. auriculata*, Wall.

Arborescent. *Leaves* ovate-oblong, emarginate and unequally two-lobed at the base, nearly sessile, the axils of the nerves glandular underneath. *Panicles* terminal or lateral, brachiate, on flattened peduncles. *Throat* of the *corolla* swelled, elevated and bearded. *Ovary* many-seeded. *Stigma* two-lobed.

Also communicated by Mr. Porter from Pinang, growing in similar situations and blossoming at the same time with the preceding.

Arboreous, erect, perfectly smooth.—*Leaves* tough and coriaceous, ovate-oblong, acuminate, seven inches long, somewhat contracted towards the sub-sessile base, which is emarginate and two-lobed, the lobes small, rounded, unequal; the axils of the nerves are excavated and glandular on the underside, which is also the case with *W.*

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*corymbosa*, in which species they are, besides, a little hairy. *Petiols* exceedingly short.—*Stipules* as in the preceding; their apex ensiform. —*Panicle* terminal, becoming sometimes lateral by the elongation of the branch, peduncled, trichotomous. *Peduncles* much compressed. Mouth of the corolla elevated and swelled. *Stigma* two-lobed. The rest as in *W. densiflora*.—N. W.

8. *W. truncata*, Wall.

Shrubby, twining. *Leaves* ovate, acute. *Panicle* terminal, on a flattened peduncle. *Throat* of the corolla naked. *Ovary* four-seeded. *Stigma* two-lobed.

A strong, climbing shrub, which I found on the hills at Pinang in flower in August. *Branches* very numerous, smooth, round, twining in every direction. *Leaves* ovate, acute or sub-acuminate, from three to four inches long, acute at the base, most entire, somewhat recurved at their margins, leathery, dark and shining above, with very slender nerves underneath.—*Petiols* slightly channelled, half an inch long. *Stipules* interpetiolar, broad-ovate, acute, sometimes bidentate, withering, and deciduous. *Panicle* terminal, open, sessile, ovate, smooth, about three inches long, with opposite ramifications, and small, lanceolate, deciduous bracts.—*Flowers* white, fragrant, short-pedicelled, ternate or sub-fasciated.—*Calyx* membranous, annular, truncate, ciliate, obscurely and unequally five-toothed.—*Tube* of the corolla sub-cylindric, four lines long, pubescent within. Mouth naked. *Laciniae* linear, spreading, equalling the tube in length, ending in a hooked point. *Filaments* capillary, nearly three lines long, inserted immediately under the fissures. *Anthers* very long, spreading. *Ovary* ovate, smooth, two-celled, four-seeded. *Stigma* clavate, two-lobed.—N. W.

ALYXIA, Banks.

*Calyx* five-toothed. *Corol* hypocrateriform. *Germ* two-lobed; lobes one-celled, few-seeded, attachment interior. *Berries* two, pe-

dicelled, one-seeded. *Embryo* erect, with echinate, lobed perisperm.

1. *A. stellata*, R.

Shrubby, often twining. *Leaves* tern, and quatern, oblong-lanceolate, polished. *Corymbs* terminal, simple, recurved.

*Gynopogon stellatum*, Forst. Prod. n. 47. Willd. spec. i. 1221?

*Pulassarium*, Rumph. Amb. v. p. 32. t. 20.

A native of Amboyna, and from thence brought to the botanic garden at Calcutta in 1798, where it thrives well, blossoms about the close of the rains in September, and ripens its fruit in the cool season.

*Trunk* scarcely any, but many, long, twining, straggling, or scandent branches as they meet with support. *Bark* of the ligneous parts ash-coloured, of the young shoots smooth, deep green. Every part abounds in a milky juice.—*Leaves* tern, or quatern, short-petioled, oblong, or oblong-lanceolate, entire, of a deep shining green on both sides; with very slender, diverging, parallel veins; length from three to six inches.—*Stipules*, a small scale between the petioles.—*Flowers* many, small, pure white, collected in small, for the most part, terminal, cymose fascicles.—*Bractes* short, cordate, rigid.—*Calyx* deeply five-parted.—*Corol.* Tube swelled at the base, and a little below the mouth where the stamens are lodged, divisions of the border nearly round, in the bud imbricated.—*Filaments* short. *Anthers* sagittate, just within the mouth of the tube.—*Germ* two-lobed, and with care separable without violence, each lobe one-celled, and containing three or four ovula, attached to the corol. *Stigma* slightly two-lobed.—*Berries* two, when both prove fertile, which is rarely the case, short-pedicelled, oval, size of a small cherry, smooth, with a groove on the inside from the blunt-pointed apex to the base, when ripe yellowish. *Pulp* in very small quantity; one-celled. I have frequently found proliferous berries, that is a second, on a short-pedice], growing from the apex of the first, as in the genus

*Anona* — *Seed* conform to the berry. *Integument* single, thin, but hard and elastic, approaching to nuciform; from the middle of the inside a vertical lamina projects one-third into the seed, then divides and proceeds in opposite directions, like the receptacles in *Chironia* (see *Gært. sem.* ii. t. 114.) to these the perisperm is attached. — *Perisperm* conform to the seed, in the centre a thin portion thereof forms an entire sac, or cavity for the embryo, the rest is divided into innumerable, diverging, fleshy, cuneiform lobes; colour greenish, becoming white, texture fleshy. — *Embryo* erect, straight, nearly as the perisperm. *Cotyledons* lanceolar. *Radicle* sub-cylindric, inferior.

*Obs.* I am inclined to think that this may be *Forster's Gynopogon stellatum*, or another species of the same genus; (now *Alyxia*; see *Brown's Prodrumus*, *Nov. Holl.* i. p. 469,) and I conclude he had not an opportunity of making himself acquainted with the carpology of the genus. Until I met with the fruit I considered it a *Rauwolfia*; but am now satisfied it cannot belong to that family. To what natural order? *Apocynae*?

### *Additional species by N. W.*

#### 2. *A. lucida*, Wall.

Younger branches quadrangular, pubescent. *Leaves* opposite, tern and quatern, obovate, acute, sometimes obtuse, coriaceous, shining above, smooth. — *Corymbs* axillary, pubescent, equalling the petals, trichotomous. *Bractes* linear, villous.

I found it on swampy shores among Mangroves at Singapore, in flower and fruit in October.

A ramous, perfectly smooth, twining shrub. *Stem* and *branches* covered with smooth, shining, brown, or mahogany-coloured bark. *Branches* opposite or tern, sometimes quatern, slender, brown, alternately and acutely four-cornered between the insertion of the leaves, where they appear somewhat jointed; a little pubescent and scabrous while young. — *Leaves* mostly opposite, on the young branches quatern,

obovate, acute or obtuse, from three to four inches long, exceeding their interstices in length, leathery, smooth and entire, while very young pubescent, tapering downwards into an acute base, on very short, channelled petiols, dark-green, shining above, somewhat glaucous underneath, with an elevated rib, and capillary, parallel, approximate veins, which unite in a sub-marginal anastomosis; they only become visible when the leaves are dry.—*Flowers* small, yellowish white, fragrant, pubescent, small, axillary, pediceled, twice or thrice trichotomous corymbs which are about the length of the petiols.—*Bractes* linear, pubescent.—*Calyx* villous, deeply divided into five linear teeth.—*Corolla* hypocrateriform. *Lobes* of the *limb* oblong, about as long as the tube, which is a little pubescent within. *Ovary* villous. *Style* capillary, long. *Stigma* sub-capitate. *Drupe*s two on each calyx, oval, sub-acute, of a pale ferruginous colour, obscurely eight-furrowed, supported by distinct pediceels, measuring about three lines in length; one-seeded. *Albumen* deeply ruminated and divided into horizontal parallel lamellæ.

*Obs.* This may perhaps be *A. Gynopogon*, Syst. veg. iv. 440. (Forster's *Gynopogon Alyxia*); but in that the leaves are all quinate; which in mine probably never exceed the quaternary number.—N. W.

*S. A.? coriacea, Wall.*

Smooth, sub-scandent. *Branchlets* alternately compressed. *Leaves* opposite, obovate, obtuse, thick and leathery, shining above. *Fascicles* axillary, equalling the petiols, pubescent. *Bractes* ovate, obtuse.

A native of the mountains of Pinang, from whence it was communicated by Mr. Porter. Time of blossoming October and November.

It is said to be a small branchy tree. The branches appear to have a tendency to climb; they are perfectly smooth, covered with brownish bark, and slightly compressed towards their apex.—*Leaves* about three inches long, with an acute, tapering base, and a rounded,

rarely sub-acute apex, remarkably firm and leathery, dark-green and shining above, somewhat glaucous underneath; rib keeled, nerves capillary, remotish.—*Petiol* about half an inch long, slightly furrowed, even at the base.—*Flowers* white, disposed in short, axillary, simple or fascicled racemes. *Bractes* ciliate, blunt. *Lacinia* of the *calyx* ovate, acute, ciliate.—*Tube* of the *corolla* swelled under the limb; throat shut with five, two-lobed protuberances. *Lacinia* oblong-falcate. *Anthers* sessile at the upper end of the tube.—*Ovary* single, ovate, two-celled, with several *ovula* attached to a septal placenta. *Stigma* oblong, blunt, fleshy.

*Obs.* I strongly suspect that this and the next species will be found to belong to *Rauwolfia*, or to constitute a new genus. This point can, of course, only be decided, when the fruit shall be obtained. The disposition of the leaf-vessels on which I place great reliance in determining generic and natural affinities, is the same as that in *Alyxia* and *Hunteria*; the structure of the calyx, ovary, and stigma correspond with that of the last mentioned genus.—N. W.

#### 4. *A. ? glaucescens*, Wall.

*Leaves* opposite oblong, terminating in a linear blunt acumen, glaucous underneath. *Corymbs* axillary, many-flowered. *Lobes* of the calyx obtuse. *Lacinia* of the corolla finely acuminate. *Throat* crowned.

It was communicated from Pinang by Mr. George Porter.

A very branchy, smooth, climber. *Branches* and *stem* round; the uppermost parts slightly compressed. *Leaves* opposite, approximate, oblong, terminating in a long, obtuse acumen; base rounded, or acute, five to six inches long, leathery, glossy above, glaucous and opaque underneath with very numerous capillary, parallel, often geminate nerves, which unite close under the margin by means of a vein.—*Petiols* slender, scarcely above half an inch long, deeply furrowed.—*Corymbs* axillary, rounded, many-flowered, sub-sessile, dichotomous, nearly smooth. *Flowers* small, white, ternate; pedicels very short, with two alternate, ovate, ciliate bractlets. *Calyx* divided

into ovate, obtuse, ciliate, segments.—*Corolla* hypocrateriform. *Tube* a little pubescent within, toward the base. *Laciniae* falcate, terminating in a long, subulate acumen. *Throat* crowned with five prominent, oblong, two-lobed, fleshy crenulate teeth, which shut it up entirely and run down the inside of the tube to the part where the stamina are lodged. *Filaments* very short. *Anthers* free, sagittate. *Stigma* acute.

*Obs.* Not having seen the fruit I am doubtful about the genus to which this plant belongs. The habit and peculiar disposition of the nerves of the leaves are those of *Alyxia*, and *Hunteria*, but the obtuse calyx and the crowned faux of the corolla indicate a generic difference. The following species of *Rauwolfia* I have added from the 1st Vol. of *Malayan Miscellanies*.—N. W.

### RAUWOLFIA.

*Corolla* oblique, salver-shaped. *Stamens* included. *Drupe* globose, with two nuts, each of two cells.

1. *R. sumatrana*, W. Jack.

“*Leaves* ternate or quaternate, elliptic-oblong, widening towards the apex, smooth. *Flowers* terminal, umbellate. Mouth of the corolla shut with hairs.”—Jack in *Malayan miscell.* i. No. v. 22. Tampal badak or Simbu badak. *Malay*.

Frequent in the neighbourhood of Bencoolen.

It grows to a small tree, having somewhat the habit and foliage of the *Mangga laut*, or *Cerbera Manghas*. The whole plant is lactescent. *Leaves* verticillate, generally in threes, sometimes in fours, short-petioled, about six inches long, elliptic, oblong, broader above and terminating in a short point, very entire, very smooth, rather firm, and having nearly transverse nerves. *Peduncles* three or four, umbellate, terminal, long, round, and smooth, bearing compound umbels of small white flowers. *Calyx* small, five-lobed. *Corolla* white; tube longer than the calyx, limb spreading, five-parted, lobes



sub-rotund, faux closed with white hairs, which appear to form five tufts. *Stamina* five incluse; *filaments* very short; anthers yellow, sagittate, acute, conniving over the stigma. *Ovary* furrowed on both sides, two-celled, tetrasporous, surrounded by an obscurely five-lobed nectarial ring. *Styles* two united together. *Stigma* peltate, capitate, glutinous, papilous. *Berry* globose, smooth, containing two nuts, which are compressed, rugose, gibbous below and tapering towards the top, sub-unilocular with an imperfect dissepiment; generally one-seeded. *Seed* compressed.

*Obs.* This species appears to have considerable resemblance to *Rauwolfia nitida*, but is sufficiently distinguished by its inflorescence. The wood of this tree is very light, and employed by the Sumatrans for the scabbards of their swords and krises. *W. Jack*, loc. cit.—N. W.

### OPHIORRHIZA, Schreb. gen. N. 273.

*Calyx* five-toothed. *Corol* funnel-shaped. *Germ* inferior, two-celled, cells many-seeded, attachment to a sub-inferior, free, clavate receptacle. *Stigma* bifid. *Capsule* two lobed, two-celled. *Seeds* numerous, angular.

#### 1. *O. Mungos*, Willd. i. 826.

*Leaves* opposite, elliptic, smooth. *Corymbs* terminal.

*Radix* Mungo, *Kämpf. Amoen.* 573 et 577.

*Leaves* opposite, petioled, oblong, entire, pointed, in texture remarkably thin, length from four to six inches.—*Petioles* short, villous.—*Stipules*, a slight connecting membrane.—*Corymbs* terminal, many-flowered.—*Calyx* superior, one-leaved, five-toothed, permanent.—*Corol* one-petalled, funnel-shaped; *tube* short; *border* five-parted, divisions oblong, hairy on the inside, pointed.—*Nectary* a thick, two-lipped, fleshy body crowning the germ between the base of the stamens and style.—*Filaments* five, very short, inserted on

the base of the tube. *Anthers* linear, erect, nearly hid in the tube of the corol.—*Germ* beneath, turbinate. *Style* as long as the stamens. *Stigma* two-lobed.—*Capsule* obverse reniform, totally compressed, (two-lobed); on the outside five ribs run down from the divisions of the calyx, internally divided into two cells by a transverse partition, opening between the remains of the two fleshy nectarial lips. *Receptacle* sub-cylindric, free, affixed to the partition near its base. *Seeds* very numerous, angular.

*Obs.* From my own knowledge, I can say nothing of the virtues, that have been by various authors ascribed to the root of this plant. Indeed I am rather inclined to look upon the whole to be a fiction.

#### *Additional Obs. by N. W.*

That Kaempfer's description of the fruit of his *Mungo* differs widely from that of our plant or any belonging to the genus, has been remarked by Gärtner (see quotation to the next species.)—The figure added to Linneus's *Materia Med.* p. 27. (copied by Plenck, icon. plant. med. i. 53. t. 90,) is tolerably correct as far as regards the leaves and the *disposition* of the fruit.—I have found the plant in several forests in the valley of Nipal, growing in dark moist places, blossoming and producing fruit during the rains; at Pinang I have seen it on the mountains, growing on rocks.—The *root* is fibrous. *Stem* erect, or sub-ascending, as thick sometimes as a goose-quill, a foot high, villous above, simple or with a few branches only. The *leaves* are unequal in size in each pair, which is more or less the case in all the other species.—*Stipules* ensiform, pubescent, deciduous.—*Common peduncle* slender, villous, from three to five inches long.—The Nepalese make no use whatever of the plant.—The Pinang plant acquires a red tint on the under-surface of the leaves on being dried; it may perhaps be found hereafter to constitute a distinct species.—N. W.

2. *O. villosa*, R.

Suffrutescent, erect, villous. *Leaves* from ovate-oblong to lanceolar. *Corymbs* terminal, long-peduncled, villous.

A native of shaded, moist places amongst the hills of Chittagong; where it blossoms in May, and the seed ripens in three or four months.

*Stems* a few inches high, simple, sub-ligneous, while young hairy. — *Leaves* opposite, short-petioled, oblong, entire, veins many, large, parallel, and hairy; from three to four inches long, and one or two broad. — *Stipules* ensiform, villous. — *Corymbs* terminal, solitary, rather long-peduncled, sub-globular, rough, with ferruginous pubescence, composed of a few recurved, short, villous branches, with the numerous, white, sub-sessile flowers on the upper, or convex side thereof. — *Calyx* hairy, five-toothed. — *Corol* funnel-shaped. *Tube* the length of the five segments, its mouth shut with hairs. — *Filaments* five, inserted on the bottom of the tube of the corol. *Anthers* linear, erect. — *Nectary* a fleshy bilabiate body on the top of the germ embracing the base of the style, as in *O. Mungos*. *Germ* turbinate, inferior, two-celled, with numerous ovula in each, attached to two large, free receptacles which are attached to the base of the partition. *Style* the length of the tube of the corol. — *Stigma* large, two-lobed, villous. — *Capsule* two-lobed, transverse, breadth twice the height, two-celled, opening round the apex. — *Seeds*, &c. as in *O. Mungos*, Gaert. carp. i. 264. t. 55.

*Additional species by N. IV.*

3. *O. tomentosa*, W. Jack. Mss.

The whole plant densely and very softly villous. *Stem* erect, branchy. *Leaves* lanceolate-oblong, finely acuminate, and longish petiols, hoary underneath.

A native of Pinang and Sumatra, where it was first discovered by the late Mr. Jack. I have found it in abundance on the hills of the former island in flower and seed from the month of August to November.

"*Stem* herbaceous, erect, branched, round, villous, reddish, about a foot in height.—*Leaves* opposite, petiolate, lanceolate, acute at both ends, very entire, four to five inches long, tomentose and dark-green above, villous and hoary underneath, with reddish nerves.—*Stipules* subulate.—*Petiol* villous, flat above, from half an inch to an inch long.—*Corymbs* terminal, peduncled, with unilateral sessile flowers.—*Peduncles* tomentose.—*Calyx* small, tomentose, five-toothed.—*Corolla* white, longer than the calyx.—*Stamina* enclosed; *anthers* linear.—*Style* elevated above the throat; *stigma* divided in two linear, thick lobes.—*Nectary* a bilabiate glandular body crowning the ovary.—*Capsule* transversely compressed, obcordate, two-celled, many-seeded."—W. Jack's Mss.

*Obs.* The above-mentioned variety of *Ophiorrhiza Mungos* is extremely like this plant, and may perhaps belong to it as a smooth variety.—N. W.

4. *O. heterophylla*, W. Jack, in *Mal. Miscell.* ii. vii. 85.

"*Leaves* opposite, sub-rotund-ovate, one in each pair much smaller than the other.

Found in the interior of Sumatra.

This species is readily distinguished by the peculiarity of one of the opposite *leaves* being always dwarf or abortive, the other is sub-rotund-ovate, with a bluntish acumen, smooth, pale, and whitish beneath. The *stem* is erect and tomentose. *Flowers* in a small terminal cyme. *Capsule* compressed, obcordate."—W. Jack, l. cit.—N. W.

5. *O. rugosa*, Wall.

Villous, creeping at the base, ramous. *Leaves* lanceolate, shining, rugose, and scabrous above. *Corymb* equalling the uppermost pair of leaves in length.

I have found it in forests on Shivapoor and other high mountains near the valley of Nipal, flowering and producing fruit during the rains.

*Root* consisting of a number of long, pink-coloured, fibres.—*Stems* several, creeping at the base, from thence ascending, the upper part erect, from six inches to two feet high, slender, round, thickly beset with short, ferruginous, spreading hairs, somewhat swelled and jointed at the insertion of the leaves.—These are spreading, opposite, lanceolate, ending in a long point, acute at the base, from one and a half, to two and a half inches long, the upper surface furrowed along the nerves, dark-green, shining, somewhat rough with short, pellucid hairs; pallid underneath, with oblique, arcuate, reticulate, pubescent nerves. *Petiol* villous, flat above, one of each pair generally shorter than the other; as is also the case with respect to the leaves themselves.—*Stipules* interpetiolar, ensiform, widening at the base, two or three lines long, sometimes bifid, slightly recurved, at length deciduous.—*Corymb* terminal, about the height of the uppermost pair of leaves, bifid or trifid. *Peduncle* an inch to two long, villous, round, fleshy, with two subulate, erect *bractes* about the middle.—*Flowers* white, pubescent, geminate, unilateral: one sessile, the other pedicelled, besides a sessile one in each bifurcation. *Pedicels* short, supported by minute linear bractlets. *Calyxine lacinia* minute, subulate, distant, erect.—*Corolla* five lines long; *tube* cylindric, a little widening at its base; *limb* divided into five lanceolate, acute lobes, half the length of the tube, villous above, as is also the mouth of the tube.—*Filaments* smooth, inserted above the base of the corolla; *anthers* linear, enclosed.—*Ovary* fleshy, small, obovate, a little compressed, pallid, two-celled; *ovula* numerous, inserted towards the bottom of the very narrow septum, on a fleshy placenta. *Style* pubescent.—*Stigma* subulate, fleshy, two-lobed, a little below the throat of the corolla.—*Nectary* two-lobed, crowning the ovary within the lacinia of the calyx, opposite to its septum.

*Obs.* It is hardly possible to fix on any positive character to distinguish among the species of this genus.—*O. villosa*, Roxb. of which I have abundant specimens before me from Sâhet, is a much shorter and less branchy plant; its leaves are whitish or silvery underneath.—N. W.

## GARDENIA, Schreb. gen. N. 416.

*Calyx* with the divisions uncertain. *Corol* funnel-shaped. *Germ* inferior, one-celled, with numerous ovula, attached to two or more parietal receptacles. *Berry* one-celled, many-seeded. *Embryo* furnished with a perisperm, directions various.

With Jussieu, Lamarck, Gærtner and others, I have at last separated the *Gardenias* with a one-celled seed vessel and parietal receptacles from those which are two-celled, with the receptacles attached to the partition. To those still called *Gardenia* belong the following unarmed species, viz. *G. florida*, *calyculata*, *costata*, *latifolia*, *arborea*, *lucida*, *gummifera*, *tetrasperma*, *montana*, and the two armed species, *turgida*, and *campanulata*. And to the latter (*Posoqueria*) belong *uliginosa*, *dumetorum*, *nutans*, *longispina*, *fragrans*, *fasciculata*, and *longiflora*, all of which are armed.

## Sect. 1st. Unarmed.

1. *G. florida*, Willd. spec. i. 1225.\*

Shrubby, unarmed. *Leaves* oval, acute at both ends. *Berries* long, turbinate, with as many sharp ridges as there are divisions in the calyx.

*Sung.* गन्धराजः, Gundhuraja.

*Beng.* Gundhuraj.

*Catsjopiri*, *Rumph. amb.* vii. 26. t. 14. f. 2.

A large, very ramous shrub, found in gardens about Calcutta, and originally from China.†

Thunberg's description of it is the best I have seen, I can only add

\* In Edwards's Bot. Register there is an excellent figure of this species and of the closely allied, if not synonymous *G. radicans*, viz. vol. i. 73 of the latter and vol. 6. 449 of the former.—N. W.

† This charming flower does not thrive well in Nipal, at least not in the Residency-garden, where I have seen the shrub. In the warmer valley of Noakote it is cultivated with success and blossoms in the hot season.—N. W.

that the flowers are axillary for the most part, and that in the calyx I have always found a small inflected tooth-like process at the bottom of each fissure, which exists also in that of the ripe berry. The seeds nestle in a firm, deep orange-coloured pulp, which is a substance employed for dying in some parts of India.

To distinguish it from *Gardenia sulcata*, Gaertner *carp.* iii. p. 78. tab. 194. I will add the following account of the fruit of this species.—*Germ* turbinate, from five to six acute-angled; at the base from three- to five-celled; above one-celled, with from three to five parietal receptacles, to which the numerous ovula are attached.—*Berry* oblong, orange-coloured, smooth, the size of a pigeon's egg, down the sides run six equidistant ribs, a continuation of the permanent, ensiform segments of the calyx, one-celled. *Receptacles* generally four, projecting from the lining of the cell to about one-fourth of its diameter, when they divide into two or more portions. *Seeds* numerous, nidulant in orange pulp, roundish, a little compressed, rugose; mode of attachment on the ripe fruit obscure.—*Perisperm* conform to the seed, pale.—*Embryo* straight, nearly as long as the perisperm. *Cotyledons* two, cordate. *Radicle* straight, pointing to, or very near to the umbilicus.

### 2. *G. calyculata*, R.

Arboreous. *Leaves* petioled, ovate, acuminate, smooth. *Flowers* terminal, solitary, sessile, germ involucred. *Calycine* segments ensiform. *Anthers* within the swelling tube of the five-cleft corol.

Native place uncertain; some thirty years ago, it was brought from Hydrabad to Lord Pigot at Madras, who planted it in his garden there, where it was pointed out to me by Lady Clive in 1798. The flowers are large, white, and like most of the genus, fragrant.

### 3. *G. costata*, R.\*

Arboreous, unarmed. *Leaves* cuneiform-oblong, smooth, ribbed.

\* This is probably the same as *G. coronaria*, Hamilt. (late Buchanan) in Symes's *Emb.* to Ava, 474 with a figure.—N. W.

*Calyx* five-angled. *Flowers* hypocrateriform. *Berry* drupaceous, oval, five-ribbed, one-celled, shell two-valved.

A native of the mountainous parts of India. From those of Chittagong, it has been introduced into the botanic garden at Calcutta; where, in ten or twelve years it has arrived to the size of a small elegant tree. It blossoms in April, and the seeds take nearly one year to ripen.

*Trunk* straight, in twelve years old trees eighteen inches circumference.—The *branches* expand but little, the *bark* of the ligneous parts is smooth and ash-coloured, that of the young shoots round, and somewhat harsh with short, adpressed hairs; whole height from ten to twenty feet.—*Leaves* opposite, short-petioled, oblong, and cuneiform-oblong, smooth, when young resinous, entire, pointed; veins numerous, large, and parallel; length from six to twelve inches, and the breadth from three to five.—*Stipules* interfoliaceous, supporting the leaves.—*Flowers* terminal, or nearly so, very large, the tube being above three inches long, and the border above four in diameter; when they first expand at day break, they are white, but in the course of the day change to a pretty deep yellow, powerfully fragrant.—*Calyx* cylindric; *mouth* irregularly divided into five lobes; outside resinous, and strongly marked with five, very prominent angles, caducous. (In my *lucida*, which this resembles most, it is permanent, smooth on the outside, and deeply divided into five uniform segments.)—*Corol. Tube* cylindric; *border* of five obliquely ovate segments.—*Anthers* five, sessile, completely within the mouth of the tube, of two filiform lobes.—*Germ* clavate, five-angled, and one-celled with numerous *ovula* attached to two opposite receptacles, rising from the sides of the cell, as in Gaertner's figure of *Chironia baccifera*, *carp.* 2. t. 114. *Style* the length of the tube. *Stigma* rather above the tube, large, and consisting of two variously grooved lobes.—*Berry* drupaceous, oblong, ventricose, smooth, yellow; five strong vertical ribs run its whole length.—*Pulp* yellow, soft and rather fœtid, one-celled. *Shell* thick, hard, and two-valved.—*Seeds* numerous, small, shape very irregular, but always much flattened, nidulant in dark-coloured, soft pulp. It is only in the germ that their insertion can be clearly traced. *Integu-*



ment hard and two-valved.—*Perisperm* soft.—*Embryo* straight, nearly as long as the *perisperm*. *Cotyledons* ovate. *Radicle* as long as the *cotyledons*, and pointing directly to the *umbilicus* which is generally the most pointed end of the seed.

4. *G. latifolia*, Willd. spec. i. 1226.

Arboreous, unarmed. *Leaves* opposite, or tern, sub-sessile, ovate. *Flowers* terminal, three-fold, sessile, from eight- to nine-cleft. *Berry* drupaceous, round, even, one-celled, five-valved.

Hind. Papara.

*Gardenia enneandra*, König's Mss.

Telinga. Caringua.

Is a native of barren rocky hills both in the Circars, and Carnatic, like the other species it flowers about the beginning of the hot season, and the seeds take nearly one year to ripen.

By slow growth it becomes a small tree, with sub-erect branches, covered with smooth, ash-coloured bark. *Leaves* either opposite, or three-fold, in a good soil always three-fold, nearly sessile, inserted into the stipular ring, obovate, entire, of a deep shining green on the upper side, paler on the lower; veins many and large, running parallel; in their axils are hollow glands, with hairy margins; from six to twelve inches long.—*Stipules* annular within the leaves, splitting irregularly when old.—*Flowers* one, two, three, or four, at the extremities of the branchlets, very large, very fragrant; when they first open in the morning white, gradually growing yellow before night.—*Peduncles* short, one-flowered.—*Calyx* small, irregularly divided.—*Corol.* Tube long, cylindric, smooth. *Border* large, spreading, from seven- to eleven-cleft, divisions obliquely oblong, the length of the tube.—*Filaments* none. *Anthers* corresponding with the number of segments in the border of the corol, linear, pointed at both ends, half immersed in the tube, the other half above its mouth.—*Germ* oblong, one-celled, containing numerous ovula, attached to five parietal receptacles.—*Berry* the size of a pullet's egg, nearly round, crowned with a small part only of the tube of the

calyx, which makes me suspect Gaertner's *G. latifolia*, Vol. iii. p. 78, must belong to a different species. That my plant is the original *latifolia* I know well; as I was with König when he first discovered it. Colour at all times a cineritious greenish yellow, a little scabrous, one-celled, and the internal, nuciform portion five-valved.—*Seeds* very numerous, attached to five parietal receptacles.

*Obs.* This species is very deserving of notice. Its large, white, young, glossy, green leaves, independent of the size, beauty and fragrance of the flowers render it very ornamental.

### 5. *G. lucida*, R.\*

Sub-arboreous, unarmed, erect, gems resinous. *Leaves* oblong, smooth, hard, and lucid, with simple parallel veins. Divisions of the calyx subulate. *Tube* of the corol cylindric, three times the length of the calyx, border five-parted. *Berries* drupaceous, with a two-valved cell.

A native of Chittagong and various other parts of India. It is in flower and fruit the greater part of the year.

*Trunk* short, and straight. *Branches* numerous, opposite, decussate, ascending, covered with smooth, ash-coloured bark; *young shoots* round, smooth, and generally incrustated with a little yellow resin, a bright yellow drop of which is often found on the gems.—*Leaves* opposite, short-petioled, oblong, smooth; *margins* interior and waved; rather obtuse-pointed, hard to the feel, both surfaces polished; *nerves* numerous, parallel, and simple; about six inches long, and about three broad.—*Stipules* annular, within the leaves; *mouth* variously divided into unequal, obtuse segments.—*Peduncles* terminal, and above the axils, solitary, round, clavate, smooth, from half an inch to an inch long, supporting a simple, beautiful, large, pure white, fragrant flower.—*Calyx* five-cleft. *Segments* ensiform, with the margins incurved, so as become subulate; permanent.—

\* Probably the same as *G. resinifera*, Roth, Nov. Spec. 150.—N. W.

*Corol.* Tube cylindric, smooth, from one to two inches long, which is more than twice the length of the calyx. *Border* five-parted; *divisions* obliquely obovate-oblong, about the length of the tube.—*Filaments* none. *Anthers* five, very long, slender and acute, half hid in the tube of the corol, and affixed by their backs to its mouth.—*Germ* oblong, even, one-celled, containing numerous *ovula* attached to two parietal receptacles. *Style* length of the tube of the corol. *Stigma* clavate, exert.—*Berry* drupaceous, oblong, size of a pigeon's egg, smooth, crowned with the permanent calyx, one-celled, its inner lamina of a bony hardness, turning into the cell on opposite sides, but soon separated into two receptacles each.—*Seeds* numerous, attached to the just mentioned receptacles.—*Perisperm* conform to the seed.—*Embryo* with two cordate cotyledons, and a cylindric radicle pointing to the umbilicus.

*Obs.* The total want of pubescence, structure of the stipules, length of the calyx, and sharpness of its divisions, distinguish this from *G. gummifera*, which it most resembles.

#### 6. *G. arborea*, R.

Arboreous, unarmed. *Leaves* ovate-oblong. *Flowers* terminal, often three-fold, sub-sessile; tube filiform; border five-parted. *Berry* drupaceous, even; shell four- or five-valved.

*Tam.* Karinga marum.

*Teling.* Garga.

A native of the Circar mountains. Its leaves are deciduous during the cold season, and it continues naked till the hot season is pretty far advanced. Flowering time the beginning of the hot season while the tree is naked of leaves.

From the buds and wounds made in the bark there exudes a very beautiful yellow resin, like that from *Gardenia gummifera*.

The size, number, fragrance, mutability and beauty of the flowers of this species, renders it more deserving of a place in our gardens than any species I know; I may even say, than *G. florida*.

The natives eat the ripe fruit.

7. *G. gummifera*, Linn. *Suppl.* 164.

Shrubby, with resinous gems. *Leaves* oblong, obtuse-pointed. Divisions of the *calyx* ovate, acute, and very short. *Tube* of the corol as long as the divisions of its border.

Native of Coromandel.

In a specimen in the Banksian herb. the divisions of the calyx are long, slender, and acute.

8. *G. tetrasperma*, R.

Shrubby. *Leaves* obovate-cuneate, smooth. *Flowers* axillary, solitary, short-peduncled, pentandrous. *Calycine* segments subulate. *Berry* round, four-seeded.

Found by Colonel Hardwick on the mountains near Shreenugur; see *Asiatic Researches* vi. 354.

*Obs. by N. W.*

The following account of this species is taken from the 6th Vol. of *Asiatic Res.* p. 354.

"*Gardenia* 3.—A plant of humble growth, shrubby, none seen exceeding two feet in height, growing among fragments of rocks on the elevated ridge near Chichooa. *Leaves* terminating the branches, without order, rather crowded, petioled, very short. *Flowers* axillary, single, on solitary, short peduncles, of a greenish white colour, and very sweet to the smell. *Perianth* above, one-leaved, half five-cleft, divisions awled, erect, permanent. *Corol*, funnel-formed; tube long, widening upwards, partly closed about the middle by a ring of silky down. *Border* five-parted, divisions ovate, equal. *Filaments* short, within the tube. *Anthers* oblong, partly within the tube. *Germ* globular. *Style* length of the tube. *Stigma* two-lobed, lobes ovate, flattened, adpressed. *Pericarp*, a berry crowned with the calyx, about the size of a common pea, one-celled, four-seeded."—Hardwick, l. cit.—N. W.

## Sect. 2d. Armed.

9. *G. montana*, R.

Arboreous. *Leaves* oblong-ventricose, downy underneath, terminal, short-peduncled. *Stamens* within the belly of the tube. *Berry* drupaceous, sub-rotund; *shell* from five- to six-valved.

*Telinga*. Tella kakisha.

A small, ramous tree; armed with strong, short, acute thorns; a native of the Circar mountains. *Leaves* deciduous in December. It *flowers* about the beginning of the hot season, viz. March and April, soon after which the leaves appear. *Bark* white, soft and spongy.

*Thorns* above the axils, opposite, spreading, short, but sharp; sometimes they are wanting.—*Leaves* opposite on the young shoots, fascicled on the older, nearly sessile, oblong, obtuse, entire, with the margins revolute, above shining and smooth, a little downy underneath, three inches long, by two broad.—*Stipules* annular, within the leaves, membranous.—*Flowers* three, four, five, or six, from little buds about the extremities of the naked branchlets, pretty large, very fragrant, when first open white, but soon becoming more or less yellow.—*Peduncles* short, one-flowered.—*Calyx* small, somewhat five-toothed, permanent.—*Corol.* *Tube* short, somewhat gibbous; *throat* smooth. *Border* from five- to seven-cleft; *divisions* wedge-shaped, emarginate.—*Filaments* none. *Anthers* in number equal to the segments of the border of the flowers, linear, entirely within the tube.—*Nectary* a moniform, fleshy ring surrounding the insertion of the *style*. The *stigma* just appears within the tube.—*Berry* the size of a pullet's egg, scabrous, ash-colour and yellow mixed; an exterior, pulpy cortex covers a hard bony shell which immediately encloses the seeds with their pulpy nidas, it is one-celled, five- or six-valved, and the incurved edges of the valves form the parietal receptacles for the seeds.

10. *G. campanulata*, R.

Shrubby, armed. *Leaves* lanceolar, smooth. *Flowers* in termi-

nal and lateral fascicles. *Calyx* five-toothed. *Corol* campanulate; border five-cleft. *Berry* round.

A native of the forests of Chittagong. Flowering time the month of March; seed ripe in November.

*Trunk* straight, but short, soon dividing and subdividing into numerous, stiff, erect, and spreading branches. *Bark* of the old parts brownish green, and pretty smooth; that of the tender parts lighter coloured; height of the shrub in five years, from five to ten feet. — *Thorns* single, short, strong, and sharp, they generally terminate the little, lateral, opposite branchlets. — *Leaves* opposite, short-petioled, broad-lanceolate, tapering most toward the base, entire, and smooth on both sides, from two to five inches long, and from one to two broad. — *Stipules* triangular, acute. — *Flowers* small, of a pale yellowish white, short-peduncled, crowded on the extremities of short, rigid, lateral, spinous branchlets. — *Calyx* cylindric, five-toothed. — *Corol* with a five-sided, campanulate tube, and a border of five obliquely-ovate segments. — *Anthers* five, sessile in the bell of the corol. — *Germ* inferior, one-celled, containing numerous ovula attached to generally five, parietal receptacles. *Style* short. *Stigma* somewhat five-grooved, and situated deep in the tube. — *Berry* round-ovate, the size of a golden pippin, smooth, depressed, and slightly five-furrowed at the apex and base; one-celled; the exterior tunic thick, fleshy, yellowish, with slender, hard, longitudinal fibres interspersed, the inner tunic thin and firm, but not bony, the edges of which turn in five portions, forming five parietal receptacles. — *Seeds* minute, nidulent in a little yellow pulp. — *Perisperm* conform to the seed, pale. — *Embryo* straight. *Cotyledons* round. *Radicle* cylindric, pointing to the umbilicus.

*Obs.* The fruit is used by the natives as a *cathartic* and *anthelmintic*, and also to wash out stains in silk.

### 11. *G. turgida*, R.

Arboreous, with swelled meally bark, branches brachiate. *Thorns* opposite and terminal. *Leaves* obovate, smooth. *Flowers* lateral,

sub-solitary, calyx five-toothed, apices of the anthers scarcely peeping from the tube of the smooth corol.

A native of Bhotan, and introduced by Dr. Carey into the botanic garden at Calcutta, where it blossoms during the months of March and April, the season when most other species of this genus are in flower, but after being twelve years in the garden it has not once ripened a single fruit.

*Trunk* straight. *Bark* very thick and spongy, appearing as if swollen and somewhat mealy. *Branches* brachiate, drooping, short, and covered with bark like that of the trunk.—*Spines* opposite, above the axils, and, when not terminal, in form of a small leaf-bearing branchlet, shorter than the leaves.—*Leaves* opposite, sub-sessile, obovate, entire, smooth on both sides, from one to four inches long, and from one to three broad.—*Stipules* interfoliaceous, acute.—*Flowers* lateral, generally single, sub-sessile, large, white, and fragrant.—*Calyx* short, cylindric, smooth, mouth slightly five-toothed.—*Corol.* Tube many times longer than the calyx, somewhat gibbous. *Border* of five, spreading, and finally revolute, obliquely-oblong, obtuse segments.—*Stam.* no filaments. *Anthers* filiform, with their apices only peeping from the mouth of the tube.—*Germ* turbinate, one-celled, ovula numerous, attached to four or five partial receptacles. *Style* short. *Stigma* clavate, five-grooved, rather longer than the anthers.

*Obs.* The swollen, even bark of this species and its straight trunk even up through the branches, render it readily known and easily distinguished from all our other Indian *Gardenias*.

#### *Additional Obs. by N. W.*

Since the period when the preceding account was written the trees in the Company's botanic garden have occasionally ripened their fruits. In 1815 one was produced, which measured two inches and a half in length, of an oval form, somewhat uneven and knobby on its surface, covered with ash-coloured scabrous epidermis, without any vestige or remnant of the calycine lobes, resting

on a short, thick peduncle. *Parenchyma* thick and hard.—*Putamen* round, bony, nearly half a line thick, five-valved.—*Seeds* very numerous, immersed in a scanty pulp, attached to five parietal placentas, corresponding to the commissures of the valves.—The fruit is not eatable.—N. W.

*Additional species by N. W.*

12. *G. densa*, Wall.

Shrubby, rigid, with numerous sub-decussate branches, ending in thorns. *Leaves* crowded, obovate, sub-sessile, smooth. *Flowers* solitary, sessile, terminal. *Teeth* of the calyx subulate.

I have only found this on the southern face of Shivapoor in Nipal, above Toka, flowering in April and May.

A very ramous, strong and rigid, erect shrub, four or five feet high.—*Branches* short, stout, divaricate and sub-decussate, obscurely four-sided, with rounded corners, covered with soft ash-coloured bark, ending in a rigid, subulate spine, which is from half an inch to an inch long. While young they are pubescent and covered with approximate pairs of stipule-like scales.—*Leaves* crowded and sub-fascicled, on the young branchlets, obovate, cuspidate-acute, tapering at the base, sub-sessile, from half an inch to two inches long, entire, smooth, opaque, with slender, oblique nerves underneath.—*Stipules* broad-lanceolate, pubescent, with membranous margins, ending in a cuspidate acumen, recurved, withering.—*Flowers* small, terminal, solitary, sub-sessile, smooth, of a yellowish-white colour, fragrant.—*Calycine teeth* subulate, spreading, about one-third of the length of the tube, which is cylindric at the base, and widening considerably towards the throat, half an inch long, pubescent within, and shut about its middle by a circular series of silky hairs.—*Limb* spreading, flat, divided into five, lanceolate, acuminate segments, nearly as long as the tube.—*Anthers* five, linear, sub-sessile, semi-exsert.—*Ovary* turbinate, smooth, supported by two opposite, lanceolate, bractlets, two-celled, with three ovula in each cell, inserted and half-immersed into a fleshy septal placenta, their free end descending.—*Style*



slender, surrounded at the base by a fleshy, annular, convex, yellow disc, which rests on the ovary within the teeth of the calyx. *Stigma* elevated above the throat, clavate, smooth, with two opposite greenish lines, obscurely two-lobed.

*Obs.* It seems to come very near to *G. tetrasperma*, Roxb. which has been well described by the discoverer, my excellent friend Major-General Hardwick, in the extract which I have subjoined to the specific character given above. The chief difference appears to consist in the axillary flowers in that species.—N. W.

### 19. *G. carinata*, Wall.

Arboreous, unarmed; all the young parts resinous. *Leaves* elliptic-obovate, ribbed, villous underneath. *Flowers* terminal, solitary. *Calyx* truncate, obscurely five-lobed, its middle marked with five strong keels. *Tube* of the corol very long. *Limb* divided into six or more lobes.

A native of Pinang, where it grows on the hills, blossoming in December. It was found by the diligent Mr. Porter, who sent me abundance of specimens.

This large and handsome species comes very near to Roxburgh's *G. costata*, for which I at first took it; and his description agrees in every respect with that of our plant except in the following points.—The leaves are here elliptic-obovate, ending in a short acumen, tapering much downwards, almost perfectly smooth above, but soft and villous underneath.—*Stipules* tubular, with a lateral or two opposite fissures at the apex, quickly deciduous from their point of insertion, which remains as a circular vestige, but often continuing in their detached state, to surround the branch loosely. *Flowers* somewhat smaller than in that species, at first snow-white, afterwards yellow; becoming when dried of a beautiful orange-colour; from six to eight-cleft, and with a corresponding number of stamens.—*Calyx* thick and fleshy, ventricose at the middle, and there marked with five large, ovate, obtuse, pretty equal keels; its mouth wider than the

tube of the corolla, obscurely lobed and waved.—The fruit is precisely as in that species.

14. *G. anisophylla*, Mss. Jack.

Arboreous, unarmed. *Leaves* densely villous, elliptic, unequal in each pair. *Stipules* opposite, lanceolate, connate at the base, bearded within. *Corymbs* axillary, villous. *Calyx* five-toothed. *Tube* of the corolla short. *Drupe* villous, oval.

Specimens were first communicated by my late friend Jack who discovered the plant at Pinang. I afterwards found it in great abundance both on the hills at Pinang, and on the island of Singapore, in fruit and flower from August to November.

A small unarmed tree. *Branches* round, ash-coloured; the upper and recent ones densely clad in rust-coloured, soft down.—*Leaves* most spreading, from oval to elliptic and sub-obovate, acute, tapering downwards, measuring from six to twelve inches, sometimes twice that length, soft and villous on both sides, especially underneath where they are marked with numerous parallel, sub-transversal ribs and with transversal approximate veins between them; they are of a rather thin texture, and become smoother by age; while young they are densely tomentose. One in each pair is always smaller than the other, measuring only one half or less of the size of the other (hence the specific name). *Petioles* from half an inch to an inch long, villous.—*Stipules* large, inter-petiole, broad-lanceolate, acute, villous, connate at the base, and bearded within, deciduous.—*Corymb* terminal or axillary, nodding, short-peduncled, much shorter than the leaves, trichotomous, villous. *Peduncles* short. *Bractes* lanceolate, deciduous. *Flowers* rather small for the size of the tree, white, sub-sessile, ternate, villous on the outside.—*Calyx* ovate, with five, acute, deciduous teeth.—*Tube* of the corolla a little longer than the teeth of the calyx, widening upwards. *Limb* divided into five, spreading, oblong laciniae, which equal the tube in length. *Anthers* subsessile, not elevated above the throat of the corolla. *Stigma* clavate,

two-lobed.—*Drupe* thin, oval or roundish, crowned with the short, mostly truncate tube of the calyx, nearly as large as a walnut, slightly ribbed, covered with short, separable villosity. *Putamen* thin, two-valved, containing a great number of seeds which lie flat on each other, in a soft fleshy pulp, and form two semi-ovate bodies, attached to two opposite short ridges, produced by the inflected margins of the shell and forming an incomplete dissepiment.

*Obs.* This tree ought perhaps to be placed under *Posoqueria* which genus as well as *Genipa* it resembles in its fruit.—N. W.

### 15. *G. tubifera*, Wall.

Sub-arboreous, unarmed. *Leaves* cuneate-oblong, petioled, slightly scabrous above, pubescent underneath. *Drupe* round, uneven, crowned with a very long truncate, calycine tube.

I have only found this in fruit at Singapore, in October.

All the young parts are resinous. *Leaves* in closely approximate pairs, from five to six inches long, ribbed, ending in a short-acumen, tapering downwards. *Petiol* an inch long.—*Drupe* almost exactly globular, an inch and half in diameter, uneven, and dotted. *Putamen* very thick, divisible into eight valves.—I have observed another species in fruit on the same island, resembling it in general habit and leaves, but differing in the fruit being rather smaller and smoother, not crowned with any tube, but with five minute teeth, containing a five-valved putamen.

I hope to be able to obtain better and flowering specimens of both, and to furnish a more detailed description hereafter.—N. W.

### *POSOQUERIA*, Aubl. Juss. Lamark, and Gaert. also *Ceriscus* of Gaert.

*Calyx*, five- or six-cleft. *Corol* tubular, border from five- to six-parted. *Germ* inferior, two-celled; *ovula* numerous, attached to a free receptacle from the centre of the partition. *Berry* two-celled.

*Seeds* numerous, nidulant. *Embryo* furnished with a perisperm, direction various.

1. *P. uliginosa*, R.

Arboreous, armed, branches straight, four-sided; *branchlets* decussate, horizontal, bearing the thorns and flowers at their extremities. *Berry* oval, drupaceous, even.

*Gardenia uliginosa*, Willd. spec. i. 1228.

*Beng.* Peeralo.

*Tam.* Wagatta.

*Telinga.* Nella-kakisha.

A rigid, ramous, small tree, armed with numerous, strong thorns. A native of various parts of India, delighting in moist places, such as the banks of rivers, low lands, &c. Flowering time the beginning of the hot season, and in some measure all the year. The seeds ripen in the cool season.

*Trunk* short, covered with a dark, rust-coloured, scabrous bark. *Branches*, some stuffy erect, very rigid, four-cornered, thick set with short, round, diverging, decussated branchlets; others spreading.—*Thorns* one, two, three, or four, at the extremities of the short, round branchlets just mentioned.—*Leaves* opposite, on the young shoots, fascicled at the extremities of the branchlets, short-petioled, oblong, smooth, shining, entire, from two to three inches long, by one and half broad.—*Stipules* within the leaves as in the rest of the genus — *Flowers* one, two, or three upon their proper short peduncles, at the extremities of the branchlets, large, white and fragrant.—*Calyx* tubular, obtusely five-toothed, permanent.—*Corol*, mouth of the tube shut up with much white hair. *Border* flat, from five- to eight-cleft; divisions orbicular.—*Nectary* a fleshy, angular ring surrounding the base of the style.—*Germ* inferior, two-celled, each containing numerous ovula, attached to a crescent-shaped receptacle in each cell, vertically united to the middle of the partition.—*Berry* two-celled, size and shape of a pullet's egg, bark ash-coloured, or

olive grey: pulp in large quantity, hard and dry.—*Seeds* numerous, oval, flattened, nidulant.—*Embryo* furnished with a perisperm, its direction various.

The flowers of this species render it deserving of a conspicuous place in the flower garden. The uncommon appearance of the plant is also in its favour.

2. *P. dumetorum*, Willd. i. 1229.

Sub-arboreous, armed. *Leaves* obovate. *Flowers* lateral, and terminal, solitary; *tube* short, border five-parted. *Berry* drupaceous, spherical.

*Gardenia dumetorum*, Willd. i. 1229.

*G. pinosa*, Suppl. Plant. p. 164.

*Teli* a. Manga.

This is one of the most common, thorny, ramous shrubs, or, in a good soil, small trees, on the coast; there is scarcely an uncultivated spot where it is not to be found. Flowering time the beginning of the wet season.

Dr. Koenig's description of this shrub, published in the *Supplementum Plantarum* of the younger Linneus is good and full.

*Germ* two celled, each containing many ovula attached to a crescent-shaped receptacle in each cell, which is vertically attached to the middle of the partition.—*Berry* round, smooth, when ripe yellow, and much like a small crab apple both in size and appearance. *Pulp* in large quantity, of a firm, fleshy texture, two-celled.—*Seeds* numerous, oval and oblong, attached as in the germ, and nestling in a quantity of gelatinous pulp.—*Perisperm* conform to the seed.—*Embryo* more than half the length of the seed, straight. *Cotyledons* roundish. *Radicle* cylindric, length of the cotyledons, *vaga*.

It is employed for fences, and fire-wood. The flowers like all the rest of this genus are highly fragrant, but in this species few in number.

The fruit when ripe, looks like a small yellow apple; if bruised and thrown into ponds where there are fish, they are soon intoxicated,

and seen floating. If this is done during the hot season, it is said, the fish generally die, but if during the wet or cold season they recover.

Fishermen sometimes follow this mode to enable them to take the fish with more ease. They are not deemed less wholesome from the effects of the fruit. *Cocculis Indicus* does not grow in these parts nor it is known or used there for this purpose.

### *S. P. nutans, R.*

Shrubby, armed, branchlets drooping. *Leaves* narrow-obovate-oblong. *Flowers* solitary. *Berries* round, crowned with the entire calyx.

*Circiscus malabaricus*, Gært. sem. i. t. 28, is with respect to shape and size a very good representation of the berry, but to render it exact the calycine segments, and the receptacles of the seeds must be added. The figures are too small for *dumetorum* growing in exactly the same spot, and with the same management. In the botanic garden at Calcutta, in twelve years, this is a tall slender shrub with very slender drooping branches, and a trunk not thicker than a man's wrist, whereas *dumetorum* of the same age has grown to be a stout, rigid, small tree, with a trunk two inches and a half in circumference, at four feet above the ground.

*Trunk* straight, from three to four feet high. *Branches* numerous, with the extreme divisions long, slender, and drooping; tender shoots a little hairy.—*Spines* axillary, opposite, horizontal, straight, slender, but hard, stiff, and sharp.—*Leaves* on the young shoots opposite, on the old ones fascicled, short-petioled, from cuneiform-oblong to round, from one to two inches long, by about one broad.—*Stipules* triangular, acute, &c. as in the order.—*Flowers* solitary from the old axils under the spines, with or without leaves, short-peduncled, middle-sized, white and fragrant.—*Calyx* with a short, rather hairy, cylindric tube, and five-parted border, all permanent.—*Corol*, outside sericeous. *Tube* very little longer than the calyx, swelled near the base, and there shut with a dense circle or valve of white hairs, pointing upwards. *Border* of five, obovate, spreading segments, which are

imbricated in the bud.—*Filaments*, scarcely any. *Anthers* filiform, without the tube.—*Germ* turbinate, two-celled, with many ovula in each, attached to two peltate receptacles arising from the centre of the partition. *Style* rather longer than the tube of the corol, swelled near the middle. *Stigma* large, roundish, clammy, apex two-lobed. *Berry* the size of a nutmeg, nearly round, somewhat rugose, pulpy, crowned with the entire calyx, two-celled. *Seeds* numerous, small, oval, flattened.—*Perisperm* and *embryo* as in the other species.

#### 4. *P. longispina*, R.

Arboreous, armed, spines opposite, and alternate, horizontal. *Leaves* obovate-cuneate, smooth. *Flowers* solitary, terminal, and axillary. *Calyx* smooth, border permanent. *Fruit* obovate, smooth.

A native of the coast of Coromandel. Flowering time the hot and rainy season.

*Trunk* straight. *Branches* numerous, the smaller long, slender, spreading, and drooping, a habit which immediately distinguishes this species from Koenig's *dumetorum*; its branches being short and rigidly erect.—*Spines* opposite or alternate, decussate, horizontal, straight, strong and sharp; length from one to two inches.—*Leaves* on the young shoots opposite, on the old ones in fascicles below the spines, all are short-petioled, obovate-cuneate, entire, smooth on both sides; size varying, from half an inch to three inches in length.—*Stipules* (examine the very young shoots to find them) within the leaves, subulate, pointed.—*Flowers* solitary, short-peduncled, generally from the extremities of the little, leaf-bearing branchlets below the spines, rarely axillary, pretty large, pure white, and fragrant.—*Calyx* perfectly smooth. *Tube* cylindric; border of five, ovate-cordate, permanent segments. In *dumetorum* the tube only is permanent.—*Corol* salver-shaped. *Tube* as long as the tube of the calyx, villous on the outside, within, a ring of projecting hairs shuts it up about the middle. *Border* of five, obliquely ovate, spreading divisions.—*Filaments* none. *Anthers* five, linear, affixed over the fissures of the border of the corol, and entirely without its tube.—*Style* thickened

at the middle. *Stigma* erect, two-lobed.—*Berry* obovate (in *P. dumetorum* round,) size of a large nutmeg, smooth, two-celled.—*Seeds* numerous, immersed in pulp.

*Obs.* Thunberg's *Gardenia spinosa* is a plant I have not seen, if it be not Koenig's *dumetorum* or this very species I have now described, consequently cannot say wherein they differ, but from *dumetorum*, which I know well, it differs very conspicuously in the structure, and disposition of the branches, in the shape of the fruit, and in the border of the calyx being permanent.

5. *P. fragrans*, Koen. Mss.

Shrubby, armed. *Leaves* long-obovate. *Flowers* numerous, collected in small, simple, terminal umbellets. *Berries* from eight- to ten-celled.

*Gardenia fragrans*, Koen. Mss.

*Telinga* Pedally.

With *P. dumetorum* it is a common, rigid, shrubby species; it seems also to delight in a poor soil, and like it is armed with strong sharp thorns. Brought into a good soil these almost totally disappear. It flowers about the beginning of the rains in June and July.

*Leaves* opposite on the young shoots, fascicled on the old ones, short-petioled, oblong; on both sides are smooth and glossy hollow glands in the axils of the large nerves; border hairy; from two to three inches long, by one and a half broad.—*Stipules* connecting the petioles, acute.—*Umbellets* simple, small, terminal, or from small tuberosities on the branchlets, bearing many, small, white, fragrant flowers.—*Peduncles* short.—*Bractes*, a small acute one at the base of each pedicel.—*Calyx* five-toothed, toothlets acute.—*Corol*, throat hairy. *Border* always five-cleft, divisions acute.—*Stamens* and *pistillum* as in the genus.—*Berry* the size of a small cherry, red, two-celled.—*Seeds* from eight to twelve in both cells, kidney-shaped, orange-coloured.

*Obs.* I know of no use this tree is put to, except to make fences, for which it is well adapted, particularly when it is the produce of a



poor barren soil, it is then well armed with strong thorns. The flowers like those of all the rest, are delightfully fragrant.

### 6. *P. fasciculata*, R.

Shrubby, spines axillary, patent. *Leaves* ovate-oblong, sub-sessile. *Fascicles* axillary, and in the forks of the branches. *Berries* two-celled.

A middling-sized, very ramous, well armed shrub, a native of Silhet, where it blossoms in March and April.

*Branchlets* smooth, opposite and dichotomous.—*Spines* axillary, patent, straight, rather short.—*Leaves* opposite, short-petioled, ovate-oblong, entire, pretty smooth, from one to three inches long.—*Stipules* interfoliaceous, acuminate.—*Flowers* collected into small, sub-sessile fascicles, in the forks of the dichotomous branchlets, or axillary, middling-sized, and like those of most of the other species, fragrant; when they first expand they are white, but gradually change to pale yellow by the second day.—*Calyx* hairy, margin divided into five, subulate segments.—*Corol* infundibuliform, border of five, oblong segments.—*Filaments* scarcely any. *Anthers* five, linear, one-third of their length within the tube of the corol.—*Germ* inferior, two-celled, each containing many ovula attached to a receptacle rising from the centre of the partition. *Style* the length of the corol. *Stigma* clavate, unequally two-lobed.

### 7. *P. longiflora*, R.

Arboreous, armed with opposite, recurved spines. *Leaves* lanceolar-oblong, smooth. *Corymbs* terminal and axillary, few-flowered.

Compare with *Gardenia multiflora*, Willd. i. p. 1231.

A native of Chittagong, where it grows to be a pretty large tree. It flowers during the hot season, and the seeds ripen in July and August.

*Branches* and *branchlets* opposite, round, and smooth.—*Spines* axillary, very strong, sharp, and considerably recurved.—*Leaves* opposite, short-petioled, from broad-lanceolar to oblong, entire,

smooth, from four to six inches long, by one and a half or two broad.—*Stipules* as in the order.—*Corymbs* terminal, and axillary, short, generally about eleven- to thirteen-flowered, every part smooth.—*Flowers* large, pale, or nearly white when they first expand, becoming yellow by the second day, fragrant.—*Calyx* tubular, mouth cut into five, semilunar segments.—*Corol*, tube long and slender; border of five, unequally lanceolate, spreading segments.—*Filaments* none.—*Anthers* five, linear, attached to the mouth of the tube of the corol.—*Germ* inferior, two-celled, with many ovula in each, attached to their elevated fleshy receptacle, rising from the centre of the partition.—*Berries* the size of common cherries, when ripe yellow, smooth, fleshy, two-celled.—*Seeds* numerous, &c. &c. as in the genus.

*Obs. by N. W.*

I have found this or one very much like it at Singapore, in abundance, in flower and fruit in the months of September and October. I have likewise had specimens of it from Silhet, where it blossoms in March, under the name of Gooja-kanta. Those from the former place differing only in the leaves being somewhat smaller, and the segments of the calyx more acute, from Roxburgh's plant, which I doubt not is Lamarck's *Randia longiflora*, Encycl. bot. iii. 26, Ejusd. illustr. t. 156. f. 3. There is a new species of *Canthium* in the Company's botanic garden, which has been introduced from Silhet under the same native name, and which in general habit and thorns resembles our shrub.—I propose calling it *C. recurrum*.—  
N. W.

8. *P. florihunda*, R.

Sub-arboreous, armed. *Leaves* opposite and fascicled, obovate, cuneate. *Flowers* in lateral fascicles; calyx longer than the tube of the corol, its segments lanceolate. *Berries* ovate-cordate, polished.

A large, rigid, ramous shrub, or, in a good soil, small tree, like *dumetorum* a native of the coast of Coromandel. Flowering time April and May, and the seeds ripen immediately after the rains.

*Trunk* in ten years old plants, in the botanic garden at Calcutta as thick as a man's leg, but short, soon dividing into numerous branches, and straight, stiff branchlets, in every direction. *Bark* ash-coloured, on the oldest parts considerably cracked.—*Spines* axillary, and rarely more than one to each pair of leaves; about an inch long, stiff, straight, rigid and sharp.—*Leaves* on the tender shoots opposite, on the old flower-bearing twig fascicled, round the flower subsessile; the general form obovate, tapering a good deal to the base; obtuse, smooth, from one to two inches long, by one broad.—*Stipules* as in the order.—*Flowers* short-peduncled, generally from four to six produced from each of the small lateral, short, scaly spurs, (as they are called by gardeners,) of a middling size, and fragrant, when they first expand pure white, but soon becoming yellow.—*Calyx* smooth; tube cylindric; segments of the border generally five, sub-lanceolate, acuminate, permanent.—*Corol*, out side sericeous. *Tube* rather shorter than the calyx, shut about the middle with a valve of fine white hairs pointing up. *Border* of five, obovate segments.—*Filaments* scarcely any. *Anthers* linear, spreading.—*Germ* turbinate, two-celled, ovula numerous, attached to a far-projecting receptacle from the centre of each side of the partition. *Style* rather longer than the tube of the corol, swelled toward the middle. *Stigma* oblong, two-lobed. *Berries* broad, ovate-cordate, polished, size of a prune, crowned with the remaining tube of the calyx; two-celled.—*Seeds* numerous, &c. &c. as in the other species.

#### 9. *P. rigida*, Wall.

Shrubby, with supra-axillary, straight, jointed spines. *Branches* and *calyces* villous. *Leaves* ovate, short-petioled, smooth. *Flowers* ternate, axillary and terminal. *Tube* long and slender. *Berries* pubescent.

I have found this in various forests both in the valley of Nipal and on the surrounding mountains. I have also had it from Noakote. It blossoms in April; the fruit ripens in June.

A strong, rigid, branchy shrub, about six feet high. *Branches*

smooth, nearly round, covered with grey bark. *Branchlets* slender, four-sided, pubescent, armed with opposite, straight, half inch long, supra-axillary spines, each having an annular joint, rarely two, above the middle, the lower half pubescent, the upper smooth, shining, and brown. *Leaves* in approximate pairs, sub-decussate, spreading, ovate, cuspidato-acute, entire, rounded at the base, two inches long, smooth and shining above, with a few short hairs along the nerves underneath. *Petiol* short, villous. *Stipules* lanceolate, cuspidato-acuminate, villous, nearly as long as the petiols, deciduous.—*Flowers* ternate, axillary or terminal on the young branchlets, fragrant, white. Each fascicle supported on a short, villous *pedicel*, as are also the single flowers.—*Calyx* sub-campanulate, densely villous, five-toothed, supported by two small, ovate *bractes*; teeth linear-lanceolate, acuminate.—*Corolla* smooth on the outside. *Tube* slender, two inches long, villous and silky within; *laciniæ* lanceolate, acute, most spreading, nearly half as long as the tube, finely veined. *Throat* slightly pubescent. *Anthers* sub-sessile, half exerted.—*Ovary* villous, ovate, two-celled, many-seeded; ovula attached to a septal placenta.—*Stigma* lifted above the throat of the corolla, thick and fleshy, clavate.—*Berry* purple, round, pubescent, about three lines in diameter, two-celled, many-seeded.

*Obs.* This species comes exceedingly near to Roxburgh's *P. fasciculata*, but differs in the villosity of its branchlets and berries. It is not unlikely that it may be only a variety of that species.—N. W.

END OF VOLUME SECOND.



## CORRECTIONS AND ADDITIONS.

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- Page** 7, *add* to Note. I have found it common on fields and in gardens, in the valley of Nipal, blossoming during the cold and hot season.
- 34, *line* 15, *add* (after *L. auriculata*, Jack.) Mal. Miscell. 2.
- — 21, *add* I have found it with ripe fruit at Singapore, on Alligator-island, and other neighbouring islands. —N. W.
- 39, — 8, *for* cariose *read* scariose.
- 42, — 8, *add* I have likewise found it on Chundragiri and Cheesapanee, flowering from November to February.—On Shivapoor it blossoms much later.
- 50, *Convolv. blandus.* *Add* the following Note. It was brought to me from Noakote in Nipal, where it grows abundantly, and flowers in the month of April.—All the tender parts are covered with glaucous pubescence.—N. W.
- 50, *C. laurifolius.*—Note. This is *Conv. ellipticus*, of Dr. Heyne's collection. *I. elliptica*, Syst. Veg. iv. 248.
- 54, *line* 8, *capitatas read* capitatus.
- 56, *1st line* of the first Note *for* Rot. *read* Bot.
- 57, *ult. for* Exo. *read* Edw.
- 64, *line* 9, *add*, My friend Mr. Royle, the zealous superintendent of the botanic garden at Saharunpoor, informs me, that the plant is common in that direc-

tion and that the natives use the seed, as a purgative, under the name of *Lal-dana*.

Page 65, 1st line of 2nd Note read confounded.

— 69, line 20, for Stigma read Segments.

— 70, Note. Add—At Silihet it grows in fields, blossoming during the rains.

— 75, line 12, Lettsonia, R. Note by N. W. This must not be confounded with the polyandrous genus bearing that name which has been recorded in the *Flora Peruviana*.

— 80, first Note. Add—This powerful climber is common in the Saul forest which skirts the northern frontier of Hindoosthan, where I found it loaded with ripe capsules in the month of December. The natives of the Turraye call it Chemedee.

— 113, add between 1st and 2nd line, Additional species by N. W.

— 124, after N. ovalifolia add R.

— 127, line 16, Amboine, *dele e*.

— 139, — 8, for pistilum read pistillum.

— 10, add R. corymbosa, Jack in Mal. Miscell. vol. i.

— 156, — 21, for shew read exhibit.

penult. read as well as.

ult. read as that of.

— 160, — 18, for on read in.

— 21, for bark read base.

— 165, — 21, Add P. malayana, Jack in Mal. Miscell.

— 167, ult. for long, acuminate read long-acuminate.

— 174, line 17, for Leaves-oblong cordate, read Leaves oblong-cordate.

— 22, for 195 read 185.

— 185, — 3, He did me the honor to call the genus *Wallichia* in his Mss.

- Page 189, line 23, for *laciniae* read *lacinia*.  
 — 193, — 21, *Ovule* read *ovulum*.  
 — 196, — 7, for *i. Spec.* read *Spec. i.*  
 — 217, — 5, from bottom, for *berries* read *Berries*.  
 — 230, second Note, commence with *Bot. Mag.* 2052.  
 — 267, *S. bicirrhosa*.—Note. A species, which is very closely allied, if not identically the same, grows at Pinang.—N. W.  
 — 269, line 8.—Note. I have seen single flowers of this shrub in the garden of my most valued friend the Rev. Dr. Carey, at Serampore, in May 1823.—N. W.  
 — 312, — 12, for *monophyllus* read *monophyllous*.  
 — 320, — 9, for “shrub rather sparingly,” read “shrub, I have found rather sparingly,” &c.  
 — 329, — 26, read *large plumula*, reaching almost to the middle of the cotyledons; its base, which constitutes the radicle, is placed, &c.  
 — 349, — 6, from the bottom insert after “Calcutta” who found it, if I mistake not, in ravines on the Island of Mauritius.  
 — 353, — 9, after respect add “that of.”  
 — 360, — 18, add after Willd. “spec.”  
 — 365, — 18, add, The plants which I brought down with me from Nipal blossomed for the first time during the rains of 1823.  
 — 369, — 12, from the bottom add. It has been introduced by Mr. Reeves from China into the botanic garden, at Calcutta, where it blossomed for the first time in October 1823.  
 — 375, — 5, read *napalensis*.  
 — 381, — 13, add, I have also had specimens from Silhet.  
 — 385, — penult. for and read *but*.  
 — 395, — 4, from bottom, *robusta*.



*Page 414, line 8, add, I have found this shrub, or one closely allied to it, in Nipal.*

— 449, — 10, from bottom, read,—“somewhat erect afterwards, &c.”

— 8, *for afterwards read a little.*

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